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NOVELTY, RARITY, HISTORY, OR USES;

TOGETHER WITH

BOTANICAL NOTICES AND INFORMATION,

AND

OCCASIONAL MEMOIRS OF EMINENT BOTANISTS;

BY

SIR W. J. HOOKER, K.H., D.C.L., F.R., A., & L.S.

VICE-PRESIDENT OF THE LINNÆAN SOCIETY; HONORARY MEMBER OF THE ROYAL IRISH ACADEMY; MEMBER OF THE IMPERIAL ACADEMY CÆSAR-LEOPOLD. NATURÆ CURIOSORUM; OF THE IMPERIAL SOCIETY CÆSAR. NATURÆ CURIOSORUM OF MOSCOW; OF THE ROYAL ACADEMIES OF SWEDEN, PRUSSIA, LUND; OF THE ACADEMIES OF PHILADELPHIA, NEW YORK, BOSTON; OF THE NAT. HIST. SOCIETY OF MONTREAL, &c. &c.
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WITH TWENTY-FOUR PLATES.

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HIPPOLYTE BAILLIÈRE, PUBLISHER,
FOREIGN BOOKSELLER TO THE ROYAL COLLEGE OF SURGEONS, AND TO THE ROYAL MEDICO-CHIRURGICAL SOCIETY,
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PARIS: J. B. BAILLIÈRE, RUE DE L'ÉCOLE DE MÉDECINE.
LEIPZIG: T. O. WEIGEL.
1845.

one of the oldest flowers should have been so considered. The stigmata are two, but very unequal, one of them being rudimentary, and this I found to be so universal, that I cannot suppose it to be the result of accident; they stand right and left of the axis. It should also be observed that connected with this inequality of the stigmata is a great obliquity in the ovary, one side being very convex, while the other is almost straight.

As to the affinity of *Sarcobatus*, the probability is that the genus belongs to the diclinous plants associated with *Chenopodiaceæ*. Indeed I had at one time laid my specimens into *Kochia*, so much does it resemble that genus. Until, however, seeds can be examined, this point must necessarily remain unsettled.

It is certainly very like *Batis* in its male flowers, especially as they are described by Willdenow; but it can have no real affinity with that ill-understood plant,* which must remain in a great measure a puzzle until the ripe seeds of it shall have been examined. Without, however, venturing just now to offer any suggestion as to its station in the Natural System, I may mention that it has no such "involucrum diphyllum" as is to be met with in books, and I do not think that its ovary is one-celled as it is described by Endlicher. Some good specimens, which I owe to the kindness of Sir W. Hooker, than the back of the ovaries; this, at least, seems certain, that if they are scales, they are completely consolidated with the ovaries at an early period. The seeds of authors appear to me to be the cells of the ovary, very easily separated no doubt. My reasons for entertaining that opinion are, first, that they evidently cohere around their axis by the whole of their inner edge; secondly, that they have that tough fibrous horizontal texture, which is a characteristic of the endocarp, but which I do not remember having observed in seeds; and thirdly, that they are invariably empty of any thing except a small brownish corpuscule at their base, which I take to be the abortive ovule. And this seems to explain why nobody has been able to make out the structure of *Batis* seeds; empty carpels, containing an abortive ovule having been the parts examined, and not the seeds themselves. It is very much to be desired that ripe seeds should be obtained, and any West Indian botanist who would send them home would be rendering a good service to science. That British botanists should be ignorant of the structure of one of the commonest plants in one of their oldest colonies is certainly not a thing to be proud of.

PLANTÆ CELLULARES *quas in insulis Philippinensibus a cl.* CUMING *collectæ recensuit, observationibus non nullis descriptionibusque illustravit*, C. MONTAGNE, D.M.

(Continued from p. 662 *of* Vol. III.)

LICHENES, *Fries.*

31. Opegrapha, *comma,* Ach. Syn. Lich. p. 3. var. *tenella,* Montag.—Graphis *tenella,* Ach. l. c. p. 80.—Coll. n. 2160.

32. O. *rigida* Fée, Essai, p. 29 et Suppl. p. 23, t. 35. f. 5.

O. crusta hypophlæode lævigata fulva linea nigra limitata; apotheciis erumpentibus (plerisque) simplicibus elevatis elongatisque rigidiusculis æut et flexuosis utroque apice obtusis marginibus patulis medio sulcatis interdum pulvere albo (an peregrino?) prismosis; perithecio atro opaco mere supero

nucleum griseum canaliculatum, hinc sectione transversali reniformem obtegente; sporidiis mature liberis primo hyalinis bisporis, tandem faliginosis transversim octies annulatis, annulis trisporis. Nob.

Cum. cl. Fee *Graphidem elongatam,* Zenck. (Pharm. Warenk. p. 165, t. 22. fig. a—f.), huc referente, facillime sentio. Liceat tirones unum illud monere, ne nimis sporidiorum secundum atætem perquam dissimilium formæ confidcant. Sectio transversalis nuclei, quæ reniformis est, nec non perithecium subtus deficiens, notæ eximiæ ad hanc speciem distinguendam, cum huic propriæ videantur.

33. Graphis *crysenteron,* Montag. Ann. Sc. nat. 2 sér. Bot. tom. 18, p. 269.—Coll. n. 2161.

34. Glyphis *heteroclita,* Montag. l. c. tom. 19, p. 83. Pl. 2, fig. 1.—var. *orbicularis.* Coll. n. 2166.

Si formam stromatis non ramosi excipias, nullum inter typum et varietatem adest discrimen.

[illegible]

STEGOBOLUS, *Montag. Nov. Gen.*

Thallus crustaceus. Apothecia erumpentia demum tympaniformia, epiphragmate lenticulari primo clausa, tandem circumscissa et, epiphragmate delapso, late aperta. Ab excipulo interiori membranaceo lacero-dehiscente nucleus theinservientes. Apothecium cylindricum, truncatum, ¾ millim. crassum, junius apice disco niveo lenticulari semimillim. lato tandem deciduo clausum. Nucleus gelatinosus e paraphysibus tenuissimis intricatis, quibus asci clavati 7-100 millim. longi, nidulantur. Sporidia octona, oblonga, hyalina, sporas quatuor foventia ascis unica serie inclusa.

Unicam speciem insignis hujusce generis in testimonium gratissimi animi Reverendo M. J. Berkeley, amico generosissimo, qui mecum suam cryptogamarum Philippinensium collectionem dividere dignatus est, dicare liceat.

36. Pyxine *sorediata*, Fr. Montag. Crypt. Cuba. p. 188, t. 7, f. 4, icon. analyt.—Collect. Berk. No. 2178 et 2174. In aliis collectionibus non eadem.

37. Fissurina *insculpta?* Montag. Ann. Sc. nat. Bot. 2 Sér. Oct. 1842, p. 50. An tantum n. 2161 anamorphoes?

HAB. Ad crustam vitro fragiliorem. Cuming, Exsic. n. 2158.

38. Paradothion *Acharii*, Montag. Crypt. Cuba, p. 153.—*Trypethelium anomalum*, Ach. Syn. Lich. p. 105.—Coll. n. 2163.

39. Trypethelium *Cumingii*, Montag. ms.; crusta vix ulla, stromate corticali ferrugineo, apotheciis in verruca seriatis ovato-oblongis papillatis tandem erumpentibus vertice denudatis pulvere rubiginoso adspersis. Asci clavati sporidia octona biseriata foventes. Sporidia oblongo-elliptica, vigesies annulata, annulis minute quadrate cellulosis, limbo lato hyalino cincta.

HAB. In cortice arborum. Coll. n. 2170.

40. T. *areolatum*, Montag. ms.; crusta areolata cervina, stromate depresso concolori tandem elevato deformi nigrescente apotheciis immersis et protrusis aggregatis, ostiolo crasso atro instructis.

HAB. In cortice indeterminato.—Exsic. n. 2164.

Thallus crustaceus sulcis verrucas peritheciorum segregantibus areolatus, colore cervino per madorem intensiore distinctus. Verrucæ depressæ, interdum elevatæ, conicæ deformesve, apice nigricantes. Stroma corticale e stratis tenuissimis pallidis luteisque alternatim formatum, tandem (an colore atro peritheciorum inquinatum?) sursum nigricans. Perithecia pauca (2—6) in eadem verruca, semimillimetro minora, ovoidea, erecta ant paululum inclinata, parietibus crassis insignia, nucleo albo farcta, ostiolo brevi atro ad superficiem verrucæ spectantia. Asci clavati, ampli, mature evanescentes, sporidia octona serie duplici disposita includentes. Sporidia tandem gelatina religata, fusiformia, limbo lato cincta, novies annulata, h. e. nucleum hyalinum in sporas denas divisum foventia, inter paraphyses tenuissimas ramosas intricatas nidulantia. Asci sporidiaque T. *Sprengelii*, Ach.

Hæc species, affinitate T. T. *erumpenti* et *deformi*, Fée, magnopere conjuncta, a priori verrucis utplurimum depressis, crusta areolata, sporidiis non tetrasporis, a posteriori iisdem notis nec non stromate albido diversissima videtur. Cum nulla alia confundenda.

41. Biatoræ *vestitæ*, Montag. Ann. Sc. nat. Bot. 2 Sér. tom. 2, p. 273.—Crypt. Cuba p. 195, t. 9, fig. 2. Species proxia.—Coll. n. 2188.

42. Stereocaulon *ramulosum*, Ach. Syn. Lich. p. 284.—Coll. n. 2183.

43. Coccocarpia *incisa*, Pers. in Gaudich. Bot. Voy. Uranie, p. 206.—Coll. n. 2181.

44. Parmelia *applanata*, Fée. Montag. Crypt. Cuba p. 223.

Crypt. p. 115, t. 146, fig. 3.—Coll. Webb. et Deless. n. 2177.

51. C. *byrsinum*, Ach. Syn. Lich. p. 319.—Coll. n. 2184.

52. Leptogium *phyllocarpum*, Montag. Lib.—Collema *phyllocarpum*, Pers. l. c. p. 204.—Coll. n. 2180.

53. L. *azureum*, Montag. Cuba, Crypt. p. 114.—Coll. n. 2182.

54. L. *Rottleri?* Montag. Hb.—Collema Ach. l. c. p. 326. Species mihi prorsus ignota, cujus characteres cum nostro lichene congruere videntur.

HEPATICÆ, *Juss.*

55. Plagiochila *dichotoma* N. ab E. in Lindenb. Sp. hepat. p. 66, t. 13, f. 1, et t. 17, f. 1.—Coll. n. 2191. Ad corticem crescit.

56. Jungermannia *Junghuhniana*, N. ab E. Syn. Hepat. p. 87. vel species eidem affinis.

HAB. Ad terram.

Omnibus notis cum illa convenit, nisi quod flagella deficere videntur. Surcula quidem inveni tenuiora, laxifolia et omnino libera, inter caules serpentia, imo eorum radicellis intricata, quæ huic aliena ducere fas est. Quamobrem an a caule originem ducant valde incertum est.

57. Lophocolea *connata*, Sw. et N. ab E. Syn. Hepat. p. 153. Cum *Racopilo tomentoso* ad cortices habitat. Coll. n. 2196.

58. Physiotium *Sphagnoides*, N. ab E. Hepat. Eur. III; p. 85. Hook. *Musc. Exot.* t. 47. Sub *Jungermannia.* Ad corticem arborum crescit.—Coll. n. 2192.

59. Mastigophora *diclados*, N. ab E. l. c. p. 18.—Coll. n. 2194.

60. Frullania *secundiflora*, Montag. Ann. Sc. nat. Bot. 2 Sér. tom. 19. p. 258.— ♀ in Coll. Berk. et Webb. ♂ in Coll. Deless.

61. Frullania (Bryopteris) *spathulistipa*, N. ab E. l. c. p. 211. Ad corticem.—Coll. n. 2190.

62. Phragmicoma *Cumingiana*, Montag. ms.; caule arcte repente dichotomo, foliis densissime imbricatis verticalibus orbiculatis concavis margine infero plicatis, plica undulata

basi prope caulem bidentata, siccitate cauli circumvolutis subsquarrosis; amphigastriis folio triplo minoribus imbricatis cuneatis apice retusis, angulis obtusis, medio rhizophoris; fructu terminali, foliis involucralibis majoribus bifidis, laciniis inæqualibus sinuque acutis amphigastrium oblongum canaliculatum apice breviter bifidum æquantibus; perianthio obovato involucralia vix superante, basi lævi, apice quinqueplicato, plicis obtusis cucullatis, stylo longo exserto apice excavato.

HAB. Ad cortices. Exsicc. 2189.

Caulis cortici arcte adrepens, uncialis, dichotome ramosus. Rami erecto-patentes vel strictiusculi. Folia densissima imbricata, sicco cauli circumvoluta, specie squarrosula, madida vero axplicata, nec tamen explanata, sed concava et plicata. Plica basi saccata et oblonga totum marginem inferum occupans quæ dein dentes binos ternosve acutos gerit et apicem versus folii undans evanescit. Amphigastria cuneata, apice emarginato-retusa, foliis triplo quadruplove minora, imbricata. Fructus ad apicem ramulorum terminalis, junior quinque costatus, costis obtusis crassis, stylo longe exserto coronatus. Folia involucralia bifida, laciniis inæqualibus acutis. Amphigastrium iisdem æquale, oblongum, marginibus recurvis canaliculatum, apice breviter bifidum, laciniis subdenticulatis. Perianthium obovatum, breve et foliis involucralibus sepultum

p. 144. *Orthotrichum incurvifolium*, Hook. et Grev. Edinb. Journ. of Science, 1824, 1, p. 117, t. 5.—Coll. n. 2202.

65. Calymperes *loncophyllum*, Schwægr. Suppl. I, P. 2, p. 333, t. 98.—Coll. n. 2214. Sterile.

66. Octoblepharum *albidum*, Hedw. Musc. Frond. III, p. 15, t. 6.—Coll. n. 2211.

67. Campylopus......

68. Bryum *coronatum*?? Schwægr. Suppl. I, P. 2, p. 103, t. 71. Coll. n. 2199. Capsula immatura, at reliqua conveniunt.

69. Pterogonium *squarrosulum*, Montag. ms.; repens, caule alterne ramoso, ramis simplicibus teretibus ascendentibus, foliis dense imbricatis ovatis sub apice acuminatis, acumine patenti, enerviis subintegerrimis, perichætialibus oblongis filiformi-acuminatis intimis longe crinitis reflexis; capsula cylindracea........

HAB. Ad cortices arborum. Cuming, Exsic. n. 2201.

Pterogonio urceolato, Schwægr. proxima species a quo tamen foliis in humido patentibus siccitate vero strictis, acumine solo patente, ad augmentum maximum microscopii sub apice manifeste denticulatis, in medio laxe lineari-areolatis, perichætialibus omnino diversis, capsula tandèm minime urceolata, sed exacte cylindrica, recedere videtur, si fides iconi saltem et descriptioni, cæterum incompletæ, tribuenda. Insuper in ejus habitu aliquid P. *hirtelli* profert, sed foliis non utitur ciliatis.

Caulis sescuncialis, fasciculis radicellarum validarum arcte cortici totus adrepens, distiche ramosus. Rami alterni, brevissimi, longitudine lineam parum superantes, adscendentes vel madore admoto erectiusculi, teretes, myuroides, seta porcina vix crassiores (in sicco). Folia confertim undique imbricata, concava, ovata, apice acuminata, acumine brevi recurvo, madore patenti-erecta, siccitate cauli appressa, vix sub vitris maxime augentibus denticulata, prorsus enervia. Areolatio insignis: nervi vice cernuntur cellulæ lineares a basi ultra medium flabellatim irradiantes et undique aliis cellulis quadratis opacioribus circumdatæ. Folia perichætialia humida hyalina, sicca decolorata, exteriora ovata, media oblonga, intima oblongo-lanceolata vaginam pedunculique basin amplectentia, omnia integra et in productionem filiformem reflexam desinentia. Areolatio æqualis, laxa. Vaginula cylindrica. Pedunculus in caule primordio lateralis, lævis, 4 lineas metiens, sinistrorsum tortilis, stramineus. Capsula erecta, cylindrica, lineam longa, fulva. Omnibus speciminibus visis peristomium corruptum fuit. Operculum calyptraque deerant.

69. Dicnemon *rugosum ?* Brid. *Bryol. univ.* ii. p. 216. *Leucodon rugosus*, Hook. Musc. Exot. t. 20. Coll. n. 2197. Sterile.

70. Spiridens *Reinwardti* N. ab E. Nov. Act. Acad. Nat. Curios. xi. 1. p. 143, t. 17, f. g. h. Hook. Misc. Bot. 1. p. 1, cum icone splendida. Coll. n. 2210. Sterile.

71. Hookeria *Philippinensis*, Montag. ms.; caule primario repente ramoso, ramis pinnatis approximatis teretibus brevibus, foliis caulinis ovato-lanceolatis acuminatis, rameis oblongis cochleariformibus apice recurvo obtuso subacuminulato undulato crispo tenuissime denticulatis, breviter binerviis, perichætialibus lanceolatis apice dissectis dentato-spinulosis; calyptra piloso-hirta, pilis lanosis albis; pedunculo scabro; capsula elongata horizontali operculo

breviora ovata, levia, interiora longiora ovato-lanceolata acuminata, plicis longitudinalibus notata, apice laciniata, lacinulis dentato-spinulosis.

Pedunculus e vaginula cylindrica fusca in caule primario lateralis, 3 lineas longus, validus, scaberrimus, purpureus, non tortilis. Capsula cylindrica, elongata, basi attenuata, lineam longitudine superans, horizontalis aut tantum nutans, brunea. Operculum e basi hemisphærica longe rostratum, cum rostro tenui obliquo capsulam fere adæquans, dilute luteolum. Calyptra mitræformis alba pilis crispis erectis onusta. Peristomii exterioris dentes 16 lanceolati, subacuminulati, transversim subtilissimeque trabeculati linea longitudinali media exarati, rubri, siccitate inflexi; interius, membrana lutescens in cilia 16 lanceolata, carinata, non lacunosa, fissa, ciliolis nullis interpositis.

Hancce speciem ab omnibus congeneribus, quamvis numerosis, perbelle distinguit forma foliorum propria et insignis. *Anictangium planifolium*, Hedwig (Spec. Musc. t. 6. f. 6-9) non male nostram plantam refert, quæ foliis binerviis concavis, non autem planis et enerviis, nec non capsula levi, diploperistoma, foliis perichætialibus dissectis et denticulato-spinulosis utens non potest non esse diversissima.

72. Hypnum *cupressiforme?* Linn.—Sterile. Coll. n. 2204.

73. H. *delicatulum*, Hedw. Musc. Frond. iv. t. 33. Coll. n. 2206.

74. H. *gratum*, Pal. Beauv. Prodr. p. 64.—Schwægr. Suppl. iii. t. 228. b. Coll. n. 2200.

75. Racopilum *tomentosum* (Pal. Beauv.) Brid. Bryol. univ. ii. p. 719.—*Hypnum tomentosum*, Swartz.—Hedw. Musc. Frond. iv. t. 19. Coll. n. 2196.*

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* In the title of this paper for Plantæ collectæ, read Plantas collectas.

Characters of TWO NEW PLANTS *discovered in British Guiana; by the* CHEVALIER ROBERT H. SCHOMBURGK, K.R.E., *Honorary Doctor of Philosophy of the University of Konigsberg, &c. &c.*

1. ALEXANDRA IMPERATRICIS, *Schomb.*

Nat. Ord. Leguminosæ.

ALEXANDRA, *Schomb.* Gen. nov. *Cal.* campanulatus, carnosus, amplus, breviter et latissime 5-dentatus, dentibus superioribus majoribus. *Discus* fere ad medium calycis adnatus. *Petala* æstivatione papilionacea, crassa, subæquilonga: *Vexillum* bilobum, apice revolutum: *Alæ* et *petala* carinalia consimilia, æqualia, oblonga, basi parum angustata. *Stamina* 10 vix inæquilonga, omnia fertilia, libera petala æquantia; *filamentis* crassis; *antheris* linearibus, versatilibus. *Ovarium* longiuscule stipitatum. *Ovula* plurima. *Stylus* incurvus, acutus, summo apice minutissimo depresso stigmatosus. *Legumen* elongatum, compressum, lignosum, bivalve, intus biloculare. *Semina* crassa, compressa, suborbicularia. *Embryo* rectus: *Cotyledones* crasso-carnosæ, lateraliter compressæ. *Plumula* inconspicua. *Radicula* brevissima.

branches and are succeeded by large seed-pods, 18-20 inches long. The Indians call the tree *Koa-toi.* The genus it is my wish to dedicate to Her Imperial Majesty the Empress of Russia. It belongs to a group of *Papilionaceæ*, the *Sophoreæ*, which form a connecting link with the *Cæsalpinieæ*, in some respects approaching *Swartzia.*

2. BARBACENIA ALEXANDRINÆ. *Schomb.*

Caudice frutescente, foliis ensiformibus subulato-acuminatis integerrimis sericeis, scapo foliis breviore apice glandulis subsessilibus verrucoso, perigonii tubo (5-6 poll.) ovario longiore glanduloso-hirto, staminibus 18 in phalanges 6 dispositis.

HAB. Roraima range of mountains, British Guiana, in about 5 degrees of north latitude, growing on sandstone hills, at an elevation of between 3-4000 feet above the level of the sea.

This fine species of *Barbacenia* I likewise propose should be honoured with the name of Her Imperial Majesty the Empress of Russia, the sister of the present King of Prussia. It is remarkable in the group of plants to which it belongs, for the great size of the stem and of the flowers : the former is 10 or 12 feet high with dichotomous branches, and the latter are 5-6 inches long. It has the habit of some frutescent *Vellosiæ*, but the perigonial leaves and petals are united into a tube above the ovary, as in *Barbacenia.* It differs however from the species of that genus hitherto described in the number of stamens, which are 18, all fertile; whilst in the Brazilian *Barbaceniæ* the two lateral stamens of each series are sterile, usually described as branches of the filament. These flowers, of which several rise from the middle of a fascicle of leaves which covers the dichotomous branches, have their slender tube covered with callosities, are of a purplish tint, within of a snowy whiteness and the fragrance resembles that of the Narcissus.

BOTANICAL INFORMATION.

Journal of a BOTANICAL MISSION *to the* WEST INDIES *in* 1843-4, *by* WILLIAM PURDIE, *Collector for the Royal Botanic Gardens of Kew.*

(*Continued from p.* 533, *Vol. III.*)

We reached Fairy Hill, a good deal fatigued, the day having been very hot, thermometer at noon 90°.

Friday, 21st. July.—We left Fairy Hill for Bath, by the same route; there being no other road over the mountains. In pastures, near Fairy Hill, I found a species of *Arum*, which the Negroes call *Jumbe Coco*, from a supposition that it is the food of Duppy, a spirit or ghost, believed to haunt Jamaica, and of which the Negroes stand in great dread. They rarely go to the woods without a trumpet, consisting of a large marine shell, perforated at one end, with which they contrive to make a most unpleasant noise, and by blowing it occasionally, they think they succeed in keeping this terrible personage at a respectful distance. To the astonishment of some negroes who were passing and whom nothing could induce to touch the plant, I gathered several specimens. One remarkable feature of the scenery of the North side of the Island consists in the entire absence of *Cacti*, before twelve o'clock. The rain had long ceased, and the river considerably subsided. Crossing the river with some difficulty, three times in about two miles, the rain again set in and lasted sufficiently long to give us a good soaking. In the moist woods here, I found some large masses of *Balanophora Jamaicensis*, a singular plant which, I fear, is not capable of cultivation; it is parasitical on the roots of living trees. We reached Bath by seven in the evening, having experienced considerable difficulty in crossing the rivers, and met with several heavy showers of rain.

Monday, 24th July.—After arranging my seeds, and dried plants, and filling one of Ward's cases with my collections from Portland, we started for Golden Valley to explore the lofty mountains in its vicinity. The road was along the bed of the Plantain Garden River in a rich and romantic valley, sometimes so narrow as to become a perfect ravine abounding with the lovely Mountain Pride (*Spathelia simplex*) thousands of which in flower presented a lovely appearance. I also saw and collected a showy *Melastoma* with glaucous foliage and white flowers. On moist rocks grew an elegant *Dicksonia*, with *Xylophylla latifolia* and *angustifolia*. After crossing this romantic river thirty times in eight miles, we reached Golden Valley, and were kindly received by Mr. Tasker.

Tuesday, 25th July.—I set off early, accompanied by Mr. Tasker and the Rev. Mr. Wharton; my servant followed with two mules laden with paper, saw, trowel, hampers, &c.; the latter articles are my constant companions. We reached Dunrobin Castle to breakfast; this is an obscure residence, but situated in a most romantic spot, surrounded by lofty mountains and deep ravines, alike clad with a highly luxuriant vegetation. After breakfast we proceeded by a narrow pass, having left our mules behind, there being no footing for them any farther, and after traversing some newly planted coffee fields, which were thriving admirably in a rich black mould, we reached a grand forest. *Tree-ferns* were abundant, prickly *Yellow-wood* (*Xanthoxylon Clava-Herculis*) *Hadsonia arborea*, *Clethra arborea* attaining a considerable size, *Psidium montanum*, and Hog-gum, (*Moronobea coccinea*). The latter singular and beautiful tree inhabits the Lagunes on the coast, no less frequently than the deep dank woods of the interior. As we ascended, I observed a few scattered trees of a gigantic species of *Podocarpus*,* and these became more numerous as we proceeded, till the wood consisted chiefly of them towards the summit of the range, which here does not exceed 3,000 feet above the level of the sea. The thermometer indicated at mid-day, 83° in the shade. This noble *Podocarpus* is among the largest forest-trees of Jamaica, and a fallen specimen I measured had been of the following dimensions. At 6 feet from the ground, diameter 3½ feet; at 40 feet, where it was still without a branch, it measured 2 feet 9 inches, and many of the boughs, which all sprung forth above that elevation, were individually no insignificant trees. The whole height of this specimen exceeded 100 feet, and it is by no means a solitary instance of such dimensions. I afterwards saw many, much loftier and of equal diameter, covered with the thick dark green foliage, so peculiar to the genus, but which this species displays in a more than ordinary degree. I caused two moderately sized individuals to be cut down, for the sake of seeds and specimens, which I obtained of the female tree, but was unsuccessful in endeavouring to procure male *catkins*. I was much amused in this little grass for the purpose; the whole being protected with splines of *Bamboo.*

Tuesday, 1st August.—After dispatching them to Port Morant, the morning being wet, it was late before we started, the Rev. J. Wharton kindly accompanying me by the mountain road to Kingston. To this gentleman, I am much indebted for many kindnesses, both during my illness and stay at St. Thomas in the East. The rain which had been falling in the mountains rendered our progress tedious, as the river was much swollen; however, after crossing it about thirty-five times, we reached Whitehall, and were hospitably received by the excellent proprietor, A. Hodgson, Esq.

Wednesday, 2nd August.—A fine and clear morning, and the lofty mountains of the interior showed to advantage. We were early afoot, and took our course through a richly cultivated district, entirely of sugar; passing the several estates of the Spring, Serge Island and Mount Ida, all in a fine state of cultivation. In the gravelly bed of Morant river, I found two species of *Crotalaria*, growing with a remarkable *Melastoma*, an erect and elegant shrub, bearing inconspicuous flowers; also a small shrubby *Eugenia*, of which I secured seeds. On our right lay the beautiful Blue-Mountain Valley, bounded on all sides, except the south, with lofty and well-wooded mountains. The district we traversed was for the most part cultivated, and presenting hardly any plants in flower. It, however, afforded me a few species of *Ferns* I had not before seen, a showy *Solanum*, with large purple flowers and of which I gathered seeds, also a striking species of *Cestrum*, and seeds of *Passiflora rotundifolia*. Ascending the mountains, we quickly attained the coffee district, which occupies all the southern face of this gigantic range, between the elevations of 3000 and 6000 feet. Above that height the coffee bush itself thrives, but does not bear any fruit; a circumstance, I should suppose, attributable to the extreme fertility induced by the atmosphere above that elevation, keeping vegetation constantly excited. In the woods higher up, which are enveloped in clouds, for at least twelve hours out of the twenty-four, there is not a particle of wood or a decayed leaf, but what is instantly covered with an extraneous growth, to such an extent, that it may be truly said there is more parasitical vegetation than original, the former consisting chiefly of *Mosses* and *Ferns*. On approaching Windsor Forest plantation, the mountains present an extraordinary aspect, in their immense fields of Rock, almost perpendicular, and of a blueish-slate colour. This phenomenon, I believe, took place during the great storm of 1815, when whole mountains were carried away, which now present frightful ravines and precipices, many hundred feet deep. This romantic spot gives peculiar grandeur to the well-wooded and lofty mountains of the vicinity. Here I procured roots of a beautiful species of *Ipomœa* covered with a profusion of slaty-blue blossoms. We then ascended a steep hill, to Wobourn Lawn, where we were kindly accommodated with beds by A. Barclay, Esq., the owner of several fine coffee properties in St. David's Mountains, and an excellent cultivator of European fruits, *grapes*, *figs*, *apples*, &c.

Thursday, 3rd August.—Leaving early, we descended to the river, which is rocky like all the steep mountain rivers in Jamaica. Two species of *Psidium* form quite a forest along the bed of this stream, mingled with *Bocconia frutescens* and rently had not chosen to wait to let us pass quietly and the road is so narrow that it is with much difficulty two people can cross. Had not the tree caught them, they must have been both dashed to atoms. The boy, after climbing off his horse's back into the tree, was safely assisted to reach Terra Firma, though shaking with fear; but we had greater difficulty in extricating the poor beast, which we effected, though with some bruises. The continued rain rendered our progress difficult; at the Botanic Garden we stopped to feed our mules, and reached Kingston about six o'clock in the evening, having had a pleasant ride over the plain of Liguanea, which we found quite destitute of verdure, for although rain had been so abundant in the mountains, not a drop had fallen on these arid plains.

At Kingston I was closely occupied for some days in preparing my collections for shipment. The heat became intense, the thermometer averaging 90° in the twenty-four hours during several days. My packages not arriving from Bath, it was necessary to take only short excursions and I accordingly started early on the 9th August to St. John's. At the Ferry, I made arrangements for exploring the Lagoons of the vicinity, on my return. The plains afforded me but a few species of *Cassia* and three of *Mimosa;* a gigantic *Fern* formed impenetrable brakes beneath the shade of the *Mangroves;* the open salt marshes (or saline) are complete fields of *Batis maritima,* imparting a lively hue to these otherwise barren tracts. The quantity of dead cattle lying on this road form a perfect nuisance, their carcases swarming with that loathsome but useful bird, the *John Crow.* Notwithstanding recent deaths, the road is literally strewed with the bones of departed generations of cattle, the heat of the plain destroying them in great quantity and none of the bodies are ever removed from the roads. To day I counted six, that had died in the preceding twenty-four hours, and it is only astonishing that more disease is not generated. At the Ferry I was much struck with a noble *Palm,* probably a species of *Cocos,* but presenting its leaves edgewise to the sun, and about 90 feet in height, it is an introduced plant and very rare in the Island. I reached Twickenham Park, and was kindly received for the night by Alex. Finlay, Esq.

Thursday, 10th August.—Off early in the morning, for the interior of St. John's; about five miles of the plains brought me to the gently undulated Red Hills of that name. Two small ponds by the road-side were full of *Pistia*, a singular little aquatic plant; its seeds are sessile at the base of the leaves, and enclosed in a little transparent bag, not unlike a nest of *Chigres* well advanced, (an annoying companion, I am now but too familiar with). The vegetation of the Red Hills is principally shrubby, and I obtained several plants in flower on isolated rocks; near Lloyd's estate grew *Portlandia grandiflora* in abundance, and larger than I had before seen it; this plant delights in rocks destitute of soil, and preserves an astonishingly vigorous growth, attaining 20 feet in height, and displaying its large bell-shaped and fragrant flowers most profusely. I next came to an extensive negro settlement, apparently of recent date; the houses were more commodious and comfortable than these poor creatures' dwellings generally are; a bed is a luxury they do not know, and their little hut consists of but one apartment with the fire in the middle, the door and palm-thatched roof serving as an outsion. We saw several small ponds overrun with *Arum seguinum*, the *Dumb Cane* (so called from the cruel use to which it was applied in the punishment of the negroes), and several *Cyperaceous* plants. I have every where observed the comparative want of aquatic plants in the ponds and lagoons of Jamaica. We arrived at Lloyd's estate about six o'clock P.M., and I was obligingly lodged by the intelligent overseer, Mr. Reid. This place is famous for its large *Shaddock Trees*, which are certainly very fine and show beautifully, laden with their large globular fruit. The pulp is of a lovely pink colour, but in my opinion very coarse eating, though many people are fond of it; these trees are called *Queen Charlotte's Shaddocks*, the reason for which name is not correctly known.

Friday, 11th August.—This day was clear and warm, I set out early for the woods to the north of Retreat estate, and arrived there about eleven o'clock A.M., thermometer 85° in the shade. The whole of this picturesque district was suffering much from want of rain, the Mountain River, a considerable stream flowing through the dense woods, about three miles from Retreat estate, altogether vanishes after a rapid and rocky course of several miles, to appear again in the same ravine, about four miles lower. I obtained several beautiful *Ferns* in this wood that I had not before seen, with two fine plants of the rare *Govenia utriculata*, a singular terrestrial Orchideous species. Trees on the banks of the river afforded me *Oncidium triquetrum*, a pretty species flowering profusely, along with several leafy kinds of *Epidendrum*, not conspicuous for beauty. The bed of this river is remarkable for large masses of isolated rock, kept constantly moist from the foaming stream dashing from rock to rock and acting as a shower-bath. These rocks are covered with a beautiful tapestry of *Ferns*, protected from the vertical rays of the sun by a noble forest, upwards of a hundred feet in height, but although consisting of the finest timbers of the West Indies, it is extremely difficult to obtain specimens of them. A simple leaf can scarcely be detected from a pinnated one at so great a height, and woven into such a dense mass from the various creepers, among which *Marcgraavia umbellata* and *Mimosa scandens*, with its large sword-shaped legumes, are peculiarly conspicuous, their cable-like stems rendering it almost impracticable to fell trees, to obtain specimens.

Having made arrangements to visit the lagoons behind the Ferry, in hopes of finding the *Nelumbium Jamaicense* of Brown, I returned after taking some refreshment at Retreat, the overseer of which, Mr. Ingram had kindly accompanied me to the woods. My mules meanwhile made the most of the time, exercising their digestive organs in a fine field of *Guinea-grass.* The introduction of this luxuriant and excellent grass has been a great boon to the Island. The native *Gramineæ* of Jamaica are coarse and generally rejected by cattle, at least when *Guinea-grass* can be obtained. Here, occurred two species of *Melastoma*, this tribe of plants consisting for the most part of handsome shrubs, appears confined to the lower mountains, altogether disappearing in the arid plains. The church at Guanaboa is a neat and elegant building, agreeably situated on a gentle undulation, commanding a view of a rich and well-settled valley where the negro houses seemed much more commodious than any thermometer was not below 70°. At Twickenham Park, Mr. Finlay, a gentleman to whom I am indebted for much personal kindness, as well as his kind endeavours to forward my views in the interior mountains, extended to me his wonted hospitality.

Saturday, 12th August.—This not being a working-day with the negroes, I was compelled to put off my visit to the Lagoons till Monday; so, after arranging my specimens, I started to the Caymanas, a fine sugar estate, situated on the margin of the Lagoons. This rich and beautiful spot forms a striking contrast with the arid plains bounding it to the south, and probably owes its luxuriance to the great moisture below, for about three yards digging is sufficiently deep to obtain an excellent spring of water. At Taylor's Caymanas I was kindly received by Mr. Dundas, who obligingly offered me the use of his boat, to traverse the Lagoons.

Monday, 14th August.—After breakfast (the most prudent time to traverse these Lagoons) I started, taking with me three negroes, armed with long bamboos, the intersecting ditches being too narrow for the use of oars. This part of the Lagoon is about 4000 acres in extent, and incapable, in its present state, of cultivation, for it is closely cut up in all directions with a net-work of ditches, about 10 feet wide, which are cleared out annually to take off the surplus water, otherwise the estates would soon be inundated. The whole of these Lagoons are covered with one continued field of *Typha latifolia,* and bounded on the north, east, and west by rocky hills, some 500 feet high. The Lagoon is but a few feet above the sea: we found the boat anchored, and although there was abundance of water, in some places 30 feet deep, we experienced a difficulty in moving through the dense mass of vegetation and the spongy bottom which we had no means or inclination to fathom. *Nymphæa Lotus* was abundant, also *Sagittaria lancifolia,* a very showy species, its delicate white flowers contrasting beautifully with the dark green foliage of the *Typha latifolia, Alisma cordifolia* was also very abundant; two *Ipomæas,* with a large *Amaranthaceous* plant, used as spinach, for which it certainly proves a good substitute *Potamogeton natans*, with two species of *Myriophyllum*, completely choke up the water-courses rendering it difficult to obtain a passage with all our exertions, the heat was intense, thermometer 100° in the shade, not a breath of air could reach us through the dense mass of *Typha*. I gathered plants of *Nymphæa Lotus*, which was the only Nympheaceous plant I saw. I was somewhat disappointed in not finding the *Nelumbium* of Brown, which from the frequent cleanings may have been destroyed, for I could not detect a vestige of it; in shallow parts of the stream *Hydrocotyle vulgaris* abounds; also along the margin of the Lagoon, I observed *Bucida Buceras*, with some fine specimens of *Canella alba*, (*Jamaica Cinnamon*); this interesting plant, the bark of which is highly pungent, is found in the higher mountains, as also occasionally on the coast. The Lagoons abound with *Ducks*, *Teal*, *Coots*, and a curious water-fowl, called by the negroes *Crab-catcher* for it watches the crab with death-like stillness, its body hidden in the grass ready to pounce on its unconscious victim. A small species of *Turtle*, about a foot in diameter, is also plentiful. One, lying entangled in the aquatic weeds, was easily caught; but it more than once tried to escape. These creatures are remarkably quickrages so much higher than in Europe, the heat is not so oppressive as might be supposed, particularly at a slight elevation above the sea.

Tuesday, 15th August.—On inquiry, I was informed that my plants had arrived from Bath by the Drogher, a small class of coasting boats, which keep up the communication between the different towns along the shore; there is no land-carriage for goods or luggage, except by special contract, which is notoriously expensive. The former mode of conveyance is remarkable for nothing, except carelessness, and my experience does not disprove the charge; for I found the plants in glass-cases, which I had carefully packed at Bath and disposed them in groups, some on the soil, but the greater part beneath it. Part of the glass was broken and a few of the plants dead; indeed they must have been turned over several times, to have produced such an effect. One box of *Orchideæ* was quite destroyed by rats, from the boards being broken. This induced me to refuse paying the freight; a line of conduct, which, if repeated by other persons, would, I doubt not, bring them to a sense of their duty. As the steamer sailed next day, there was no time to lose, and fortunately I had spare cases with me to repair the damage. A few days were devoted to arranging my specimens and I then took my passage in the steamer Anglesea, for Port Henderson, about ten miles from Kingston and parallel with Port Royal.

August 23rd.—Accompanied by my servant and a small quantity of paper, as I expected to return the next day, we left Kingston at 7 A.M., and after a cool and pleasant sail, landed at Port Henderson by 8 o'clock, just in time for breakfast. The harbour of Kingston has a very rich appearance, and is on all sides beautifully fringed with groves of *Mangrove*. The bark, branches and leaves of this tree are chopped up together, and used with success in tanning leather, which is then considered equal to English. Beneath water, the roots are encrusted with oysters, and other shell-fish; so that by detaching about 6 feet in length of the roots, you have more oysters than one person can carry. They are smaller than European oysters, but equally good. Port Henderson is the shipping port between Kingston and Spanish Town; a wharf and a small inn are the only objects to preserve its name. Our breakfast consisted of coffee not polluted with milk, bread, biscuits and butter; in using the latter, which is perfectly liquid from the intense heat, a spoon is substituted for the knife. Fish would have been provided, but they were not yet caught, and we all exhibited too much impatience to wait: for this provision we had the pleasure of paying three shillings each, and thus ended our breakfast at Port Henderson. An arid range of rocky hills, rising abruptly about 200 feet from the sea, extends about thirty miles. Behind these stretches an extensive plain terminating at the base of the central range of Blue Mountains. These hills are rarely visited with rain, and the vegetation is consequently different from anything I had seen, composed chiefly of *Cacti*, which give a very singular appearance. The few shrubs interspersed are quite leafless from the intense heat. Two very pretty species of *Turnera* were adorning the rocks with their showy yellow flowers. At the Apostle's Battery, a small fort opposite Port Royal and mounting about half a dozen guns on a very commanding spot, I met the Captain the fruits are agreeable and allay thirst. A few sheep are the only domestic animals that exist here, and they are kept alive and in tolerable condition during the long droughts, which Captain Carey informs me have this time continued for nine months without a shower, by the *Melocactus communis*. This *Melocactus* is simply slit open with an hoe or spade, when the sheep eagerly eat it, carefully avoiding the spines. My man Edward, having no shoes, kept up a constant grumbling at the spines of the different *Cacti*, as we threaded our way from rock to rock, any mistake in our footing would, as a matter of course, have been attended with painful consequences. In a deep cavern, Captain Carey shot a fine *Guano*, the first I had ever seen; this animal is not unlike a small *Alligator*, and lives in holes and rocks; *Wild Goats* are also abundant, we saw a flock of about fifty, but they were too shy to get near them. They certainly verified their proverbial activity, for we no sooner beheld them, than they were out of sight. *Gossypium Barbadense* is abundant among the *Cacti*, casting its delicate produce to the winds, in considerable quantities. The day being advanced and a great sameness existing in the plants, we commenced our retreat by the same route, securing some good specimens of *Melocactus communis*, and *Cactus Peruvianus*, a species, I believe, not in our collections, and reached the Battery by 5 o'clock, just half an hour too late for the steamer. The Captain had succeeded in killing two Guinea Fowl, which, with the *Guano*, made us an excellent dinner; the latter was very tender, but I must confess, among so many good things, I could not give it the preference. It appears sharp work to kill and eat poultry on the same day, but there is no keeping provisions in the tropics; it is no uncommon thing at times in Jamaica, to catch the fowls, after the traveller arrives, and have them on the table in half an hour. The land-breeze setting in, made the atmosphere cool and pleasant, for the day had been intensely hot; the radiation from the rocks was sometimes overpowering, thermometer 96° in the shade at mid-day.

(*To be continued.*)

Voyage au Pole Sud et dans l'Océanie; BOTANIQUE, *par* HOMBRON *et* JACQUINOT (la Phanérogamie) *Chirurgiens de l'Expédition; et* MONTAGNE (la Cryptogamie). *Large folio. Paris. Plates only.*

At p. 127 of the last volume of our Journal, we noticed the contents of the six first fasciculi of this work, and we have now to record the publication of two more fasciculi. We have still to complain, as before, of the non-appearance of a single description, or indeed, of a single line of text, to this costly undertaking; farther than the little brochure from the pen of the talented Montagne on the *Algæ* and some of the *Hepaticæ* and *Mosses,* in the Annales des Sciences Naturelles. The want of letter-press, for which no apology is offered, (or, if made, it is not issued with the work), is the more felt at this time by one whose labours will be next noticed, and who is now engaged in publishing the botany of similar regions. For ourselves, too, Messrs. Hombron and Jacquinot must excuse us, if, judging from their figures alone, we pass too severe a criticism on some of the genera or species. The authors may, in their descriptions, if such are ever intended to appear, adduce reasons in favour of their views which might influence our own. Under present circumstances, we only pronounce upon the plates *speciosum*, Hook. fil. described in the July number of the "Flora Antarctica," and figured in the August number. Tab. 7 is devoted to two plants: 1, *Calucechinus antarctica*, Hombr. et Jacquinot, a form of the old *Fagus antarctica* (statuâ proceâ); and 2, *Calusparassus betuloides*, Hombr. et Jacquinot. If by this latter is meant the *Fagus betuloides*, Mirbel, we have already expressed a doubt, in the first series of this Journal, vol. ii, p. 157, if it be distinct from *F. Forsteri*, Hook. (Betula antarctica, *Forst.*), and we see nothing to alter our opinion in the present figure. Tab. 8 exhibits: 1, *Calusparassus Pumilio*, Hombr. et Jacquinot; and 2, *Calucechinus Montagni*, Hombr. et Jacquinot; and we must be pardoned, if in the absence of any descriptive matter, we venture our belief that we have here again representations of our old friends, the former, *Fagus antarctica*, and the latter, *Fagus Forsteri*. Thus, if we are correct in our views, the six figures on the three folio plates, all from the Straits of Magelhaens, only exhibit forms of two different plants. Such variations may even almost be seen on one and the same tree, depending much on the age and the several modifications of the leaf and capsule, and the number of divisions at the mouths of the male perianth. Tab. 9 exhibits an admirable figure of the well-known (even in cultivation) *Veronica decussata*, Willd., from Magelhaen's Straits (V. elliptica, *Forst.*), in flower and fruit; and on the same plate, *Veronica finaustrina*,* Hombr. and Jacquinot (Auckland Islands), which is identical with *Veronica Benthami*, Hook. fil. in the September number of the "Flora Antarctica." Excellent as are the figures of the natural size, we cannot pay the same compliment to the reduced representations of the entire plant, whether on this or other plates. Tab. 4, though headed "Monocotylédones Phanérogames," contains, besides the Monocotyledonous species, a composite plant of Magelhaen's Straits, *Lasiorrhiza purpurea*, Lessing. The other plant is the glory of the Auckland group of Islands, here referred to *Melanthaceæ*, and called *Veratrum Dubouzeti*, but in the October number of the "Flora Antarctica," it stands as *Chrysobactron Rossii*, Hook. fil. The insertion of the leaves, where they are supposed to be represented of the natural size, and still more, the reduced figure of the entire plant (f. G, 7), are extremely unlike the noble specimens now before us, where the leaves are much sheathing around a stout and very succulent stem.

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* We are puzzled to understand the derivation of this word; for, if compounded of *finis* and *auster*, as if Lord Auckland's were the southern limits of the genus, it is a manifest inaccuracy, inasmuch, as is well known, the V. *decussata*, Willd., represented on the same plate, is found several degrees further south.

The Botany of the Antarctic Voyage of H.M. Discovery Ships, EREBUS *and* TERROR, *in the years* 1839-43, *under the command of* CAPTAIN SIR JAMES CLARK ROSS, Kt. R.N., &c., *by* JOSEPH DALTON HOOKER, M.D., R.N., F.L.S., *Assistant Surgeon of the Erebus, and Botanist to the Expedition.*

Part I. FLORA ANTARCTICA.

1. *Botany of Lord Auckland's group and Campbell's Island.*

As announced in our 2nd vol. p. 275, the first number of panied by a coloured chart of the South Circumpolar regions, showing the discovery tracks of Cook, Weddell, and Ross. The subjects of the first part were mentioned at p. 148 of our last volume of the Journal; and in future we must, in general, content ourselves with a notice of such species as are *figured*, they being the most novel and the most remarkable. Tab. 9-10 represents a second species of the new genus *Anisotome*, A. *antipoda*, Hook. fil. (Ligusticum antipodum, *Hombr. et Jacquinot*). Tab. 11. *Pozoa reniformis*, Hook. fil., a peculiar genus of *Umbelliferæ*, hitherto supposed to be confined to extra-tropical South America, unknown to the Floras both of New Zealand and Australia. Of *Araliaceæ*, a *Panax* (P. *simplex*, Forst.), and an *Aralia* (A. *polaris*, of Hombron and Jacquinot, Voy. au Pole Sud, Botan. t. 2, without description, a not very appropriate name, seeing that the islands where it grows are no nearer the South Pole than London and Paris are to the North Pole). This our author describes as "one of the most handsome and singular of the vegetable productions in the group of islands it inhabits, which certainly contain a greater proportion of large and beautiful plants, relatively to the whole vegetation, than any country with which I am acquainted. Growing in large abundant masses, on rocks and banks near the sea, or amongst the dense and gloomy vegetation of the woods, its copious bright-green foliage and large umbels of waxy flowers, often nearly a foot in diameter, have a most striking appearance." Tabs. 13, 14, 15, and 16 are devoted to four *Coprosmas*, and no less than six species are described as inhabiting these islands. Tab. 17. *Trineuron spathulatum*, Hook. fil., a singular little composite plant, which grows on the summits of the mountains; while Tab. 18, *Ceratella rosulata*, Hook. fil., is a no less remarkable plant of the same order and from the same localities, though confined to Campbell's Island. Tab. 19, *Leptinella lanata*, Hook. fil. Tab. 20, *L. plumosa*, Hook. fil. Tab. 21, *Helichrysum prostratum*, Hook. fil. Tabs. 22 and 23, *Pleurophyllum speciosum*, Hook. fil., a name it well merits (Albinea oresigenasa, *Hombr. et Jacquinot*). Tabs 24 and 25, P. *cri-*

niferum, Hook. fil.; a still more noble species, 5 and 6 feet high, with leaves often 2 feet long and 1 foot wide. It covers a great extent of ground, and forms the larger proportion of the food of the hogs which run wild upon the islands of Lord Auckland's group. Tabs. 26 and 27, *Celmisia vernicosa*, assuredly one of the most lovely of all composite plants, with rosulate leaves looking as if varnished, and flowers having white or pale rose-coloured rays and a deep purple disk, or eye. Tab. 28, a second species of *Forstera* (Ord. *Stylidieæ*), and constituting a subgenus, "*Helophyllum*," the *F. clavigera*, Hook. fil. Tab. 29, *Pratia arenaria*. Tab. 30, *Androstoma* (nov. gen. of *Epacrideæ*) *empetrifolia*, Hook. fil. Tabs. 31 and 32, *Dracophyllum longifolium*, Br., a noble species, with long, narrow, fasciculated leaves, like those of a Monocotyledonous plant, and a stem or trunk from 15 to 25 feet long. Tab. 33, *D. scoparium*, Hook. fil. Tab. 34, *Suttonia divaricata*, Hook. fil. (Myrsine divaricata, *A. Cunn.*) Tab. 35, *Gentiania concinna*, and 36, *G. cerina*, two exquisitely beautiful species. Tab. 37, *Myosotis capitata*, Hook. fil. Tab. 38, *M. antarctica*, Hook. fil. The well known *Veronica decussata* of our Gardens, we find changed to *V. elliptica*, on the authority of Forster's Herbarium. Tabs. 39 and 40, *Veronica Benthami*, Hook. fil. (V. finaustrina, *Hombr.*

never divided, nor even in any of the specimens I have examined, exhibiting three grooves, as in the plate of the Voy. au Pole Sud, I cannot think that character of any weight. On the other hand, the æstivation of the perianth, introrse anthers and crustaceous testa to the seed, and the size and form and arrangement of the latter, are all characteristic of *Asphodeleæ*, while the plant is, in habit and generic affinities, so nearly allied to *Bulbinella*, Kunth, that I long hesitated whether or not to unite it to that genus. In my more advanced flowers the perianth is invariably deciduous." Tab. 46, *Juncus antarcticus*, Hook. fil. Tab. 47, *Rostkovia gracilis*, Hook. fil. Tab. 48, *Luzula crinita*, Hook. fil. Tab. 49, *Oreobolus pectinatus*, Hook. fil. Tab. 50, *Isolepis Aucklandica*, Hook. fil. Tab. 51, *Uncinia Hookeri*, Boott. The three last-mentioned plants, though described in the sixth Part, will not be figured till the succeeding (January) number. The author does not confine himself to bare descriptions of the genera and species, but gives copious remarks on their history, and on their geographical distribution. Four more Parts will complete the account of the Flora of Lord Auckland's group and Campbell's Island. The readers of our Journal need not be told that its pages already contain brief characters of all the Australian Lichens and Hepaticæ, and of the new species of Mosses.

Systema Piperacearum; exposuit F. A. GUIL. MIQUEL, 1 *vol.* *8vo. Rotterdam.*

Botanists are infinitely indebted to Dr. Miquel* for what has long been a desideratum, a Monograph of the family of the Peppers. This our author has happily accomplished in one volume, 8vo. which is dedicated to one of the best of men and one of the most distinguished patrons of science, especially of botany, Baron Benjamin Delessert. In the preface, Dr. Miquel acknowledges the numerous sources whence he has derived the valuable and extensive materials for his work, and an introduction, showing great learning and research, treats on the history of the family under the following heads: 1, *Doctrinæ botanicæ de Piperaceis ortus ac progressus.* 2, *Structuræ ratio generalis.* 3, *Proprietates Chemicæ.* 4, *Divisio Piperacearum.* 5, *Ordinis affinitates.* 6, *Distributio geographica.*

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* Not Miguel, as printed by an error of the press, at p. 114 of our second volume.

The *Conspectus Generum* exhibits twenty genera, arranged in two Tribes.

Tribus prima : PEPEROMIEÆ.

1, Verhuellia, *Miq.* 3 species. 2, Phyllobryon, *Miq.* 1 sp. 3, Acrocarpidium, *Miq.* 14 sp. 4, Peperomia, *R. et P.* 190 sp. 5, Erasmia, *Miq.* 1 sp.

Tribus altera: PIPEREÆ.

6, Pothomorphe, *Miq.* 10 sp. 7, Macropiper, *Miq.* 6 sp. 8, Chavica, *Miq.* 46 sp. 9, Rhyncolepis, *Miq.* 4 sp. 10, Cubeba, *Miq.* 14 sp. 11, Piper, *L.* 32 sp. 12, Muldera, *Miq.* 2 sp. 13, Coccobryon, *Klotzsch*, 1 sp. 14, Callianiaca, *Miq.* 1 sp. 15, Enckea, *Kth.* 23 sp. 16, Peltobryon, *Klotzsch*, 5 sp. 17, Sphærostachys, *Miq.* 1 sp. 18, Artanthe, *Miq.* 191 sp. 19, Ottonia, *Spr.* 12 sp. 20, Zippelia, *Blume*, 1 sp.

A list of *corrigenda et addenda* follows, and the work combines with a *Tabula Phytogeographica*, in which the 563 species are enumerated according to countries; from which it re-

Plantæ Preissianæ, sive Enumeratio Plantarum quas in Australia occidentali et meridionali-occidentali annis 1838-41, *collegit* LUDOVICUS PREISS, PH. DR.; *partim ab aliis partim a se ipso determinatas descriptas illustratas, edidit* CHRISTIANUS LEHMANN. *vol.* 1, *fasc.* 1. *Hamburg*, 1844.

The botanical treasures of Western Australia have lately been rendered available to the botanists of Europe by the indefatigable exertions of two distinguished collectors, one a native of Scotland, the other of Germany. Of the former, Mr. James Drummond, whose collections are best known to the British botanist, our pages bear ample testimony to the great extent and value of his discoveries. Of Mr. Preiss, the great circulation of his extensive collections has naturally been upon the continent. Both are sent with numbers, and we hail with peculiar pleasure the appearance of a work which will enable the possessors of both the one and the other collections (seeing they are nearly from the same localities), to determine their species, whether by aid of the numbers (for many of Drummond's numbers, though a very limited proportion of them are here indicated), or by the specific characters and descriptions, which seem to be done with much care and attention. Indeed, the names of the contributors to the determination of the different families are a guarantee for their competent execution; for besides the names given us of the authors of the respective families, published in the first fasciculus, we find that S. Endlicher undertakes the *Alismaceæ, Commelinaceæ, Hæmodoraceæ, Irideæ, Liliaceæ, Orchideæ*; C. G. Nees ab Esenbeck, the *Amaranthaceæ, Chenopodeæ, Chrysobalaneæ, Crassulaceæ, Cyperaceæ, Dioscoreæ, Frankeniaceæ, Gentianeæ, Geraniaceæ, Gramineæ, Halorrageæ, Hypericineæ, Laurineæ, Nyctagineæ, Œnothereæ, Plantagineæ,*

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* Several equally complete sets have been sent over to the care of the Editor of this Journal; the first series, consisting of 1000 species, and a second series, of 400 additional species, at the price of £2 the 100 species. Two, and only two, sets yet remain undisposed of. (W. J. H. Dec. 1844).

Portulaceæ, *Primulaceæ*, *Restiaceæ*, *Rosaceæ*, *Solaneæ*, *Urticeæ;* F. A. G. Miquel, the *Apocyneæ*, *Avicennieæ*, *Casuarineæ*, *Cupressineæ*, *Gnetaceæ*, *Loranthaceæ*, *Malvaceæ*, *Olacineæ*, *Santalaceæ*, *Sapindaceæ*, *Zygophylleæ ;* E. T. Steudel, the *Büttneriaceæ*, *Dilleniaceæ*, *Oxalideæ*, *Polygaleæ*, *Ranunculaceæ*, *Rhamneæ ;* W. H. de Vriese, the *Convolvulaceæ*, *Goodeniaceæ ;* F. T. Bartling, the *Caryophylleæ*, *Diosmeæ*, *Labiatæ*, *Myoporinæ*, *Rubiaceæ*, *Scrophularineæ*, *Verbenaceæ ;* Joach. Steetz, the *Compositæ*, *Tremandreæ ;* A. Bunge, the *Cruciferæ*, *Stackhousieæ*, *Umbelliferæ ;* O. Guil. Sonder, the *Epacrideæ*, *Stylideæ ;* J. F. Klotzsch, the *Euphorbiaceæ ;* G. Kunze, the *Filices ;* E. Fries, the *Fungi*, *Lichenes ;* E. Meyer, the *Junceæ ;* C. F. Meisner, the *Mimoseæ*, *Papilionaceæ*, *Polygoneæ*, *Proteaceæ ;* E. Hampe, the *Musci ;* J. C. Schauer, *Myrtaceæ ;* A. Putterlich, *Pittosporeæ*. The other orders, not now mentioned, are undertaken by the editor, Professor Lehmann.

The first Fasciculus commences with the *Leguminosæ*, which occupy ninety-four pages ; then follow *Rosaceæ*, *Chrysobalaneæ*, *Myrtaceæ*, *Halorageæ*, *Œnothereæ*, and part of *Oxalideæ ;* the *Leguminosæ* and *Myrtaceæ*, as may be expected, filling the greater part of the one hundred and sixty pages. We are glad to see our *Macrostigma australe*, [redacted] only be attributed to want of experience in lithography on the part of the talented artist, Miss Drake.

In the third Fasciculus, the Californian plants are brought to a conclusion. A new species of *Pedilanthus* is figured, *P. macrocarpus*; and two new *Euphorbiæ* are represented, out of eight new ones that are described. Plate 25 is *Mozinna canescens*, Benth. *Serophyton* is a new genus of *Euphorbiaceæ*, which, besides the Californian species S. *lanceolatum*, is made to include two Texian ones of Mr. Drummond's collections. *S. Drummondi* (Texas, 2nd Coll. n. 245; 3rd Coll. n. 317), and *S. pilosissimum* (Texas, 2nd Coll. n. 263, and 3rd Coll. n. 222). *Eccremocarpus* is another new Euphorbiaceous genus founded upon *Croton ? setigerus*, Hook. Fl. Bor. Am. 2, p. 141, and figured at 26 as *E. setigerus*.

The third portion of this work describes the plants of western tropical America, collected between Mexico and Guayaquil. This is prefaced by some general remarks from the pen of Mr. Hinds. Of this extensive line of country, a very great proportion of the plants collected are well-known species. Among the new ones, figures are given of *Capparis* (Cynophalla) *Sinclairii*, *Triplandron lineatum*, *Ruyschia bicolor*, and *Planarium latisiliquum*: the three latter are not at present described, but will be so in the ensuing number.

Synopsis Hepaticarum; auctoribus C. M. GOTTSCHE, J. B.G. LINDENBERG *et* C. G. NEES *ab* ESENBECK 8vo., *Hamburg*, 1844. *Fasc.* I.

A work of this kind has long been a desideratum; and whatever may be the opinion regarding the limits of genera and species in the family, there cannot be a doubt, from the names of the authors, that this will prove an important addition to the library of the cryptogamic Botanist. We could have wished the authors had commenced with a table of the tribes, sub-tribes, and genera; but they have probably found, as we did, in the case of the "Species Filicum," that this is better accomplished at the close than the beginning of so laborious a work, in which our ideas are liable to alter as we proceed. The present number comprises one hundred and forty-four pages, and commences with the first tribe of *Hepaticæ*, the *Jungermanniæ*. The first tribe is, GYMNOMITRIA, Nees, including the genera,—1. *Haplomitrium*, Nees; 2. *Gymnomitrion*, Nees; 3. *Acrobolbus*,* Nees; 4. *Sarcoscyphus*, Corda; 5. *Alicularia*, Corda. Sub-tribe II: *Cœlocaules*, Nees, including 6. *Gottschea*, Nees; Sub-tribe III: JUNGERMANNOIDEÆ, Nees, including 7. *Plagiochila*, Nees et Mont.; *Scapania*, Lindbg; and 9. *Jungermannia*, L., which breaks off at the 131st species.

On Azolla and Salvinia, by W. GRIFFITH, ESQ.

This is the title of a long and most elaborate and profound Memoir on *Azolla* and *Salvinia*, by Mr. Griffith, published in the number for July, 1844, of the Calcutta Journal of Nat. History. To it we must refer our readers; for it would not be easy, within the limits of our notice, to give a summary

racemi) includentes saccum luteum, vel plures (et tunc singuli in capsuli secundaria reconditi), materia granuloso-viscosa, oleaginosa farctum et incrustatione e maxima parte tectum. *Aliæ* (superiores cujusque paris vel racemi) continentes capsulas secundarias ∞, globosas, pedicellos simplices terminantes, singulis includentibus massam (vel massas 2-3) aspectu cellulosam, in qua sporæ immersæ." This the able author divides into two sub-families: 1. SALVINIEÆ; genus *Salvinia:* and 2. AZOLLINÆ; genus *Azolla.* Three 4to plates, with copious analyses, are given in illustration of the structure of *Azolla*, and as many of *Salvinia.*

Flora Rossica; sive Enumeratio Plantarum in totius Imperii Rossici Provinciis Europæis, Asiaticis et Americanis hucusque observatarum; *auctore* DR. CAROLO FREDERICO A LEDEBOUR, *vol.* 2, *part* 1 ; *Stuttgard,* 1844.

We are glad to be able to announce the appearance of the first part of the second volume of this laborious undertaking, of which we gave a brief notice at p. 126 of our last Volume of this Journal. This second volume commences with the *Amygdaleæ* ; and the first part closes with *Dipsaceæ.* All the specific characters, and synonyms, and descriptions, are done with great care. Each volume commences with a "Conspectus Generum et Specierum," and at the close of each order are tables divided into three heads: 1. "Ranunculacearum (or whatever the order may be) distributio in Imperio Rossico." 2. "Ranunculacearum Floræ Rossicæ distributio quoad durationem." 3. "Tabula comparativa Ranunculacearum Floræ Rossicæ et Germanicæ ;" and 4, "Tabula comparativa specierum e Ranunculacearum ordine, quæ singulis Floræ Rossicæ regionibus cum aliis et cum Germania communes sunt."

Jaubert *et* **Spach**, *Illustrationes Plantarum Orientalium, Vol. 1. Paris*, 4*to*.

The first volume of this charming work is now completed and it is in every respect worthy of the authors. It contains, besides the elaborate maps, one hundred beautifully executed figures of new or little known Oriental plants. We have, in the first volume of the present Journal, p. 147, detailed the motives which induced the noble author to undertake this important publication and in our subsequent volumes is given a brief notice of the contents of the Livraisons as far as Part 10; with the omission of only one part, which had not then come to our hands. We shall now mention the species figured in that portion as well as in the remainder of the volume. Tab. 83, *Asperula sherardoides*, n. sp. t. 84. *Cytisopsis*, a new genus, C. *dorycniifolia*, n. sp. t. 85. This and the three following plates are devoted to some very remarkable forms of the genus *Statice;* the present one *St. Arabica*, n. sp. t. 86. *St. Bovei*, n. sp. t. 87. *St. sisymbrifolia*, Jaub. et Sp. (St. spicata, *Hohen.*), with leaves, as the name implies, resembling those of a *Sisymbrium;* but with denser spikes of flowers, at first sight more like some *Valeriana*, than a *Statice;* t. 88. *St. plantaginiflora*, n. sp.

1. *Collection de Plantes desséchées de la Morée et de l'Attique.*

M. Théodore de Heldreich, jeune botaniste connu par ses voyages en Sicile, et maintenant établi en Grèce, vient d'envoyer à Genève un petit nombre de collections de plantes provenant de la Messénie, de la Laconie, surtout des chaînes du Malévo et du Taygète, où il a passé tout l'été de 1844; une faible portion de ces plantes a été récoltée en Attique, dans l'automne de 1843 et au printemps de 1844. Ces collections, séchées avec soin et intelligence, et dont les espèces Méditerranéennes communes ont été exclues, comprennent la plupart des bonnes espèces de ces contrées, décrites soit dans la *Flora Græca*, soit dans celle de Morée de Bory et Chaubard, et venant représenter dans les herbiers la Flore d'une partie presque inexplorée de l'Europe, combleront ainsi une lacune importante. Les déterminations ont été faites par M. E. Boissier. Le nombre des espèces varie de 400 à 200 d'après le numéro d'ordre des collections. Le prix est de 28 francs par centurie.

S'adresser, franco, à M. Reuter, rue de Coutance, No. 136, à Genève.

2. *Nouveau Voyage Botanique de M. de Heldreich en Orient.*

M. Théodore de Heldreich se proposant de continuer l'année prochaine ses excursions botaniques et ayant besoin, pour parcourir des contrées plus lointaines, de ressources supérieures à celles dont il a pu disposer jusqu'ici, vient proposer aux botanistes et aux Musées d'histoire naturelle, des actions payables d'avance pour un voyage dans lequel, suivant les circonstances, il explorera Candie ou Chypre, ou le littoral opposé et les montagnes de l'Anatolie, contrées si intéressantes par la richesse de leur végétation et de leur position intermédiaires entre les Flores Européene et Asiatique. Il récoltera des plantes desséchées et des graines. Chaque action est de 100 francs. Les souscripteurs ne paieront la centurie que 25 francs au lieu de 32, prix auquel elle sera portée pour les non-souscrivants: la priorité pour

l'importance des collections leur sera acquise dans l'ordre de leur souscription, et cette dernière leur sera remboursée en tout ou en partie, en cas de réussite incomplète du voyage.

Les souscriptions, en mandats sur Paris, et les lettres, doivent être envoyées à M. Reuter, rue de Coutance, No. 136, à Genève. La souscription sera fermée au 1er janvier, 1845.

Decades of Fungi; *by the* Rev. M. J. Berkeley, M.A. F.L.S.

Dec. III.—VII. Australian Fungi.

(Tabs. I. II.)

The subjects of the present decades were sent to Sir W. J. Hooker, by Mr. Drummond from the Swan River. It will be observed that a large proportion are either entirely new species, or common European forms; the few remaining species are, with scarce an exception, not tropical forms. The collection is very rich in species belonging to the *Lycoperdaceous* and *Podaxineous* group and we have reason to believe that new discoveries will be made in these families. The list of *Agarics* would be much larger had not the notes belonging to many species been lost, and the specimens

On the ground. Much eaten by the smaller marsupial animals.

Pileus 1-6 inches broad convex fleshy, shining, adorned especially in the centre with pyramidal wart-like scales, veil at first rather thick, soon vanishing from the stem and attached to the inflected edge of the pileus. Stem about 1 inch high with a very thick bulbous base which is elongated below into a thick pyramidal root. Gills free or only adnexed, broadish with their interstices smooth, white. Spores white, broadly elliptic when seen from behind, but when viewed laterally the inner side is nearly straight.

A magnificent species which comes near to *Ag. Vittadini*, Morett.

*A. nudus, Bull. *Drumm.* n. 128.

22. A. (Tricholoma) *muculentus*, n. sp.; cæspitosus; pileo convexo subcarnoso umbonato glabro albido, stipiteque subæquali solido viscosissimo; lamellis tenuibus distantibus ventricosis rotundatis dente attenuato a stipite remotis acie integris. *Drumm.* n. 43.

On the ground amongst moss.

Cæspitose forming small tufts about 1½ inch high. Pileus 1-1½ inch, white, thickly coated with a transparent jelly, convex slightly fleshy, umbonate not scaly. Stem 1-1½ inch high, 1½-2 lines thick, viscid like the pileus nearly equal expanded above solid. Gills ventricose, thin, distant, entire, rounded behind with a narrow tooth and leaving a free space round the top of the stem. Spores subglobose, white.

The colour of the whole when fresh is apparently white. It approaches very near to *Ag. mucidus*, but that has a strong persistent ring and belongs to the section *Armillaria*. The habitat too is different.

*A. *gilvus*, P. *Drumm.* n. 115.

On the ground amongst little twigs &c., with a branched white mycelium.

Messrs. Tulasne shewed me one in a similar state gathered on very sandy ground in France.

23. A. *radicatus*, Relh. var. *superbiens*, Berk.; pileo con-

vexo fusco visciduło; stipite radicato longissimo subcavo intus strigoso, extus præsertim ad basim furfuraceo-velutino, lamellis distantibus adnato-decurrentibus. *Drumm.* n. 119.

Pileus 1 ½-3 inches broad, convex, dark brown (when dry), slightly viscid, smooth, sometimes lobed; stem 5-6 inches high, ¼ inch thick, attenuated upwards, minutely furfuraceous especially at the base, rooting deeply. Gills distant adnato-decurrent, yellowish at length orange in dry specimens.

It is possible that this may prove distinct, but if so it is allied to A. *radicatus.* The colour of the gills in the largest specimens is nearly that of the hymenium of *Stereum hirsutum* which seems to indicate a specific difference.

24. A. (Mycena) *crinalis*, n. sp.; tenerrimus, pileo hemisphaerico membranaceo striato albo; stipite capillari lutescenti-fusco farinaceo; lamellis paucis arcuatis decurrentibus. *Drumm.* n. 221.

On decayed wood.

Gregarious; pileus ½-1 line across, very delicate, hemispherical, smooth, striate, membranaceous, white. Stem about an inch high, flexuous, yellow-brown, farinaceous, attached by a few strigæ. Gills 8-10 white, arcuate, decurrent.

This minute species belongs to the section *Filopodes* of *Mycena*, but there is none with which it can be confounded.

*A. *fibula*, Bull. On the ground.

when dry, very decurrent, quite entire with their interstices even. Spores white.

Allied to *Ag. nidiformis*, Berk., which is also a phosphorescent species. See vol. 1, p. 215, and vol. 2, p. 173.

*A. *atro-cæruleus*, Fr.—*Drumm.* n. 131.

*A. *applicatus*, Batsch.— *Drumm.* n. 224, 286.

*A. *perpusillus*, Fr.—*Drumm.* n. 132.

*A. *chioneus*, P. Myc. Eur. vol. 3, p. 28, tab. 26, fig. 10, 11. On dry dung.

26. A. (Volvaria) *xanthocephalus*, Berk.; pileo convexo aureo e volvâ albo-maculato; stipite bulboso, volvâ adnatâ margine sublibero lamellisque remotis attenuatis liberis pulcherrime pallido-gilvis. *Drumm.* n. 107.

On the ground.

Pileus 1-2 inches broad, convex, sometimes umbonate, subcarnose with the margin very thin, varying from bright orange to golden yellow spotted by the volva. Stem 1-2 inches high, 2-3 lines broad, strongly bulbous at the base, slightly dilated above, furnished at the base with an adnate volva whose borders are free of a beautiful cream colour. Gills of the same colour as the stem, moderately broad, but not ventricose, much attenuated behind and leaving a circular space round the top of the stem. Ring none.

The specimens of this species are not so perfect as could be wished, especially as regards the gills, so that I am not absolutely certain as to the colour of the spores, but as far as I can judge from their appearance under the microscope and especially from the circumstance of the gills being remote, I think myself justified in considering it a *Volvaria*. Without the assistance of Mr. Drummond's notes, I should not have ventured to describe it, but the characters are so marked, that there can be no difficulty in recognizing it, and I shall hope shortly to obtain more perfect specimens.

27. A. (Pholiota) *allantopus*, Berk.; pileo carnoso aureo innato-squamuloso; stipite subtenui basi elongatâ bulbosâ; annulo fugaci; lamellis ferrugineo-aureis adnatis.—*Drumm.* n. 100.

On the ground.

Pileus 3½ inches broad, fleshy, umbonate, golden yellow with minute innate scales. Stem 4 inches high, 1-3rd of an inch thick above, swelling at the base into an oblong rooting bulb which collects the earth with its fibrillose mycelium after the fashion of a Scleroma, ring fugacious. Gills bright ferruginous-yellow adnate rather broad, spores elliptic, golden-yellow when seen by transmitted light.

This species is closely allied to *Ag. aureus*, but differs very much in the nature of the stem. It is a very noble species.

*A *lanuginosus*, Fr. (non Bull.)—*Drumm.* n. 229.

28. A. (Naucoria) *Drummondii*, n. sp.; pileo convexo glabro viscoso, stipite fibrilloso fistuloso sarsum farinaceo, basi tomentoso, tomento super matricem expanso, lamellis argillaceis ventricosis denticulatis.—*Drumm.* n. 116.

On rotten wood.

Pileus ⅓ of an inch broad, convex, subhemispherical, very thin even in the centre, smooth, viscid. Stem ¾ of an inch, ½ a line thick, nearly equal fibrillose below, farinaceous above from the remains of the white marginal furfuraceous fugitive veil, clothed at the base with white down which spreads in a round patch over the matrix. Gills argillaceous, rather distant, ventricose, adnate with a slight tooth, margin white, denticulate, spores argillaceous, elliptic. The young plant is

*A. *mollis*, Schæff.—*Drumm.* n. 296, *in part*, 129, 272, *in part.*

There are several other Agarics in the collection, some of which are probably new, but which do not admit of being determined without notes.

*Bolbitius *fragilis*, Fr.—*Drumm.* n. 118.

On dung.

*A. *campestris* L.—*Drumm.* var. *varius.* n. 105. var. *maximus*, n. 104.

On the ground.

Of this well-known species Mr. Drummond finds two varieties which he names maximus and varius. The former of these, which even in middle sized specimens attains the diameter of a foot, is found in poor clay land in the white gum forests. The stem is about two inches thick and very short; the cuticle thick and tough and projecting over the gills and forming a distinct border. The gills are whitish with a tinge of rose colour, turning to deep rose colour, when bruised and the flesh when exposed to air changes to deep rose colour. It is said to be as much superior to the common form as Knights Marrow Fat Pea is to the Hotspur.

The other variety is much smaller and is covered with a delicate iron-red scaly cuticle, with a purplish tinge, but so thin that the flesh appears white through it. The gills are of a beautiful rose-colour, cream-colour, or white, scarcely two individuals being found alike; it grows under the York gum trees.

The cultivated plant, Mr. Drummond writes, was introduced into the colony, and soon became naturalized about Perth. It may be indigenous in Western Australia, but in ninety-nine places out of a hundred where it is now found, he has no doubt it is introduced, being carried from farm to farm by the domestic animals.

" Few orders of plants," says Mr. Drummond, " appear to contribute more to the support of animal life than the *Fungi* in Western Australia. Many species, particularly of the genus *Boletus*, are used as food by the natives, and directly supply no inconsiderable portion of their support for several months in the year; but since I began to make my collection with the intention of sending them to you, I have often been surprised at the large number of fungi that are eaten by almost the whole of the marsupial animals. Of many species, I am satisfied that scarce a hundredth part escapes them; so assiduous are they in watching them, that of several sorts which are common in the ground, they rarely allow one to appear above the surface. They are directed to them apparently by smell and the cracking of the ground over them, and dig them up and devour them, leaving only some fragments to tell where they grew, and several of our fungi I only know from fragments seen of them in that way.

"The most delicious of our *Fungi* for the table is a plant nearly allied to *Boletus*, but the pores instead of being placed side by side, on the under side of the pileus, run in all directions through the mass, at least through that part of it which is elevated on a stem. The whole plant is white, the lower part farinaceous like a mealy potato; the shape of the upper part is irregular, generally angular uneven above. It is common in a particular sort of land, but it is so eagerly sought by the fungivorous animals, that it was with great difficulty I could procure a few specimens. The only thing which fibres, covered with a mucous coat. Stem ¾ of an inch high, 2 lines thick, slimy, like the pileus; root and mycelium yellow; gills ventricose, adnexed. Spores of a red ochre.

31. Paxillus *Eucalyptorum*, n. sp.; cæspitosus pileo convexo carnoso compacto flavo-fusco; stipite deorsum attenuato transversim squamuloso; lamellis distantibus decurrentibus flavis; sporis elongatis.—*Drumm.* n. 111.

Under the York gum trees.

Cæspitose. Pileus 3-9 inches across, yellow brown, convex, very thick and fleshy, compact, with a very minute, mealy pubescence, especially near the margin. Stem 2½ inches high, ¾ of an inch thick above, attenuated below, marked with flat, minute, transverse scales. Mycelium white, reticulate. Gills of a fine yellow, thick, scarcely at all ventricose, slightly decurrent, sparingly forked, separating from the pileus. Spores large, oblong, colourless, at least when dry. Antheridia conical, giving the gills a pubescent appearance.

32. Cantharellus *viscosus*, n. sp.; pulcherrime flavus; pileo infundibuliformi repando subundulato viscoso; stipite deorsum attenuato flavo-pruinoso; plicis lamelliformibus furcatis decurrentibus; sporis læte ochraceis.—*Drumm.* n. 114.

On the ground, amongst little twigs, &c.

Whole plant of a beautiful yellow. Pileus 1½ inch across, infundibuliform with the margin, repand, subcarnose. Stem 1 inch high, gradually increasing towards the part where the gills are given off, where it is 1-3rd of an inch thick, attached by a white anastomosing mycelium to twigs, &c., covered above with yellow meal. Folds decurrent, gill-like, but rather thick forked. Spores of a bright ochre, oblique under the microscope, of a beautiful golden yellow.

A very beautiful species, of which I have seen only a single specimen, accompanied fortunately by notes. It agrees in the colour of its spores with *Cortinarius*, but is distinguished at once by its thick, lamellar processes. I do not know any species of *Cantharellus* allied to it. The habit is that of C. *cibarius* and *aurantiacus*.

* Lentinus *fasciatus*, Berk. Hook. Journ. of Bot. vol. 1. p. 146, tab. v.—*Drumm.* n. 134. var. ε. fasciatus.

In this variety the hairs of the pileus are more distinctly fasciculate, the gills almost uniform in colour, and there is no trace of the peculiar band at their base. In other respects the specimens agree, and certainly indicate only a single species.

* Schizophyllum commune, Fr.—*Drumm.* n. 280, (in part).

33. Boletus *marginatus*, Drumm. mss; pileo convexo compacto subtiliter velutino margine tenui ab hymenio discreto involuto; stipite brevi turbinato-tuberoso subradicato nigro non reticulato subvelutino; tubulis liberis fuscis intus pallidis; sporis subrotundis pallide ferrugineis.—*Drumm.* n. 155.

On the ground, but rare.

Pileus 5 inches across, convex, very fleshy, compact, black, with a fine velvety down, which is of a golden brown under the microscope, furnished at the edge with a thin, almost membranous border, distinct from the hymenium and involute. Stem 1½ inch high and thick, very much swollen, and incrasslimy surface and changeable flesh.—It is much esteemed by the natives as an article of food.

35. Polyporus (Mesopus) *oblectans*, n. sp.; pileo tenui coriaceo depresso inciso repando centro præsertim zonato, strigoso-striato nitidulo late cinnamomeo; stipite centrali velutino rubro-fusco; poris parvis dentatis cinnamomeis.—*Drumm.* n. 157.

On sandy ground.

Pileus 1¼ inch across, deeply depressed, with the margin spreading and laciniated, thin, coriaceous, rough, with linear radiating, somewhat strigose, bundles of flocci more or less zoned, especially in the centre, slightly shining, of a rich cinnamon brown, except in the centre, where it is frequently cinerous; sometimes crested with flat, laciniate processes, or laterally confluent. Stem central, about 1 inch high, 1-2 lines thick, clothed with a rich, red-brown velvety pubescence. Pores small, very irregular, and jagged, with thin dissepiments, often very shallow, or quite obsolete towards the margin, of the same colour with the pileus.

This species resembles *Pol. perennis*, but differs in its bright colour, more flexible substance, and in the peculiar appearance of the pileus. It is also very near to P. *cinereus*, which has however much larger pores, as well as being of a duller tint. It accords with P. *Montagnei* in this latter respect, but that is a much smoother and neater species.

36. P. (Mesopus) *Cladonia*, n. sp. minuta; pileo cyathiformi tenuissimo fasciculato-tomentoso fulvo-cinnamomeo demum glabrescente nitido nigro; stipite sursum incrassato velutino. Hymenio tarde evoluto; poris brevibus irregularibus.—*Drumm.* n. 220.

On common soil.

Pileus ¼-½ an inch across, cyathiform, very thin, of a tawny cinnamon fasciculato-tomentose, at length becoming perfectly smooth, black, shining, and zoned. Stem ½ an inch high, gradually swelling upwards into the pileus, and of the same colour with it. Hymenium for a long time barren, and of the same colour with the stem; pores small, shallow, irregular.

This agrees in many respects with P. *oblectans*, but perfect specimens are scarce ½ an inch in diameter, and there is a peculiar habit about the species like that of Cantharellus sinosus. The colour of the stem also is different, and the whole plant much more delicate. It changes when old very much, and becomes black, like many *Agarics*. The name is intended to indicate its resemblance when young to some of the cupbearing lichens.

* P. *gilvus*, Schwein.—*Drumm.* n. 247, 278.

* P. *isidioides*, Berk. Hook. L. J. vol. 2, p. 415.—*Drumm.* n. 283.

In Mr. Drummond's specimens the hairs are collected into short setiform processes. The species is very closely connected with P. *gilvus*. This is not the only instance in which Uitenhage species occur in Australia.

* Pol. *varius*, Fr. *Drumm.* n. 154.

Pileus innate-squamulose at first minutely velvety. A single specimen only found on the flooded gum.

37. P. (Apus) *demissus*, n. sp.; pileis imbricatis cucullatis suberosis dependentibus spongioso-tomentosis pallidis postice flavis fulvisve; hymenio demum griseo-fusco margine sterili; poris subrotundis, acie albis subobtusis.—*Drumm.* n. 150.

On decayed partly charred wood.

This species makes tinder without any preparation.

38. P. (Apus) *ochroleucus*, n. sp.; erumpens, pileo angulato suberoso pauci-zonato ochroleuco primum subtiliter tomentoso demum glabro, margine obtuso sterili, contextu albido hymenio subconcolore poris punctiformibus parvis sæpe obturatis acie obtusis integerrimis.—*Drumm.* n. 248, 285.

Bursting through the bark of decayed branches.

Pileus 1½ inch broad and long, angulate, corky, at first minutely tomentose, but soon nearly smooth, with four or five convex zones, whitish ochre, rather tawny in the older portion; margin obtuse, barren. Hymenium flat or slightly convex; pores small, round, with obtuse dissepiments, as if pricked with a pin, rather darker than the pileus, yellowish within, sometimes slightly angular, arranged regularly in quincunxes, stratose. Substance white.

There is a strange resemblance between this species and the Philippine P. *ochreo-laccatus*, Mont., but not only does it want the laccate coat, but the substance of the pileus is white instead of brown. It is curious that, as in that species, the orifices of the pores are often blocked up. I cannot point out any species to which it is really very closely allied, but it will take its place near *Pol. marginatus.*

39. P. (Apus) *compressus*, n. sp.; minor, oblique compresso-ungulatus; pileo zonato lineato-rugoso primum albido-fulvo demum brunneo-nigra; contextu angustissimo albido; hymenio obliquo albo; poris stratosis parvis punctiformibus subintegris.—*Drumm.* n. 141.

On hard dead wood.

Pileus 1 inch broad, ⅓ inch long, hard, obliquely ungulate and compressed at first, of a tawny white and occasionally slightly tomentose, passing through different shades of brown to black, zoned, marked with raised rugged lines, paler towards the margin. Substance whitish, extremely thin. Mycelium white, penetrating deeply into the wood. Hymenium for the most part extremely oblique, so that the pileus and hymenium are almost in the same plane white. Pores stratose, 1-100th of an inch in diameter, forming almost the whole substance of the pileus, whitish, wood-coloured within, punctiform; dissepiments obtuse, nearly entire. In a very young state there is probably a slight silky appearance.

Allied to the foregoing species and to *Pol. annosus* also, but on a much smaller scale.

40. P. (Apus) *rimosus*, n. sp.; pileo duro longævo altissime ungulato zonato cinnamomeo; zonis recentioribus lætioribus sericeis lineatis; vetustioribus rimosis; hymenio rhabarbarino; poris parvis subangulatis acie velutinis, contextu ferrugineo.—*Drumm.* n. 144. P. *igniarius*, *var. scaber*, Berk. Annals of Nat. Hist. vol. 3, p. 324.

On gum-trees and manna-trees; much preyed on by the larva of a small moth.

Pileus 3-4 inches broad, 1¼-2½ inches long, 2-4 inches high, very hard and slow of growth, zoned, the older portions much cracked, brown and scabrous, the border of a pretty cinnamon, elegantly marked with silky lines, with the edge acute, but in old specimens occasionally very obtuse. Pores rhubarb-coloured, small, irregular, their edge velvety. Substance ferruginous.

This I formerly considered as a variety of *Pol. igniarius*, but perfect specimens before me do not confirm this notion. The pores are larger, and the whole aspect of perfect specimarked with patches of the rhubarb-coloured mycelium; margin alone free, obscurely zoned, rather thin and acute, bay marked with linear wrinkles. Hymenium extremely concave, bay; pores minute, stratose, forming indeed the whole mass of the pileus, rhubarb-coloured within. The growth of this species is extremely slow, a very thin layer only being deposited annually, which barely reaches the margin.

This species was not gathered by Mr. Drummond himself, but brought to him by a native on account of its curious form, which is like that of some large *Gryphæa* or *Productus*. The specimen, indeed, resembles much in form the upper fig. tab. 321 of *Productus personatus* in Sowerby's Mineral Conchology. It is allied to *Pol. igniarius*.

P. *cinnabarrinus*. Fr.—*Drumm.* n. 148.

* P. *Feei*, Fr. *Pol. lilacino-gilvus*, Berk. — *Drumm.* n. 147.

This species, like many others, varies extremely as regards the surface of the pileus, which in some specimens is nearly smooth, in others, clothed with a spongy coat. I therefore refer the Australian plant to P. *Feei*, of which I have a specimen from M. Fée's herbarium.

42. P. (Apus) *venustus*, n. sp.; pileo reflexo coriaceo zonato albido; zonis obscurioribus; antice fasciculato-tomentoso hispidulo, postice subcalvescente, margine subfusco; hymenio purpureo; poris mediis variis, dissepimentis tenuibus laciniatis.—*Drumm.* n. 135.

On dead wood of some Conifera or allied family, probably *Casuarina*.

Forming elongated patches, consisting of numerous, often imbricated individuals, attached laterally and effused behind, with the margin broadly reflected or entirely resupinate; pileus thin, coriaceous, dirty white, with a few dark zones gradually becoming smooth behind, in front clothed with fasciculate down slightly hispid; extreme margin brown. Hymenium of a beautiful purple when fresh, purple-brown when dry; pores about 1-30th of an inch in diam.; dissepiments thin, laciniate, often breaking up into fine lamelliform processes.

Allied to *Pol. abietinus*, but at once distinguished by its far larger pores, which break up into lamelliform plates, so as to present the appearance of a *Dædalea*, and the different aspect of the pileus. It is also nearly allied to *P. Menandianus*, Mont., *pergameneus*, Fr., *arcticus*, Fr., *laceratus*, Berk.; but it is on a larger scale than any of these. Individuals occur in which the zones are scarcely visible, and the whole aspect of the pileus different, but they have evidently been affected by some external causes.

* P. *ferruginosus*, Fr.

On dead wood.

43. P. (Resupinatus) *tardus*, n. sp. albus; mycelio ceraceo corticiiformi, margine angusto tomentoso; poris tarde evolutis parvis integerrimis.—*Drumm.* n. 130.

On dead wood.

At first resembling *Corticium molle*, at length producing pores, and forming large patches with a narrow tomentose margin; orifices of the pores, which are about 1-100th of an inch in diam., quite entire, rather obtuse. The hymenium is at first white, but in drying assumes an ochraceous tint.

* Trametes *Pini*, Fr.—*Drumm.* n. 145.

Some of the smaller specimens are regularly zoned.

44. Hexagonia *decipiens*, n. sp.; pileo horizontali duro suberoso plus minus zonato rufo-fusco velutino margine quandoque ferrugineo: hymenio griseo-brunneo, poris mediis irregularibus, dissepimentis crassiusculis.—*Drumm.* No. 151, 152.

On *Casuarina*, penetrating through the bark.

Pileus ¾ of an inch long, 1½ inch broad, hard, corky, horizontal, sometimes much effused at the base, with either about three equal convex zones, clothed with a rich, red-brown, velvety pile, or with many zones, in which case either the whole pileus or the margin is ferruginous; mycelium and substance ferruginous, but where it enters the matrix nearly white. Hymenium horizontal, greyish brown; pores 1-30 of an inch in diam., irregular; dissepiments rather thick.

Some specimens are perfectly resupinate, in which case the pores are far wider, and sometimes there are pores on the pileus 2 or 3 lines broad, probably from the specimens having been accidentally reversed. This is one among the many instances which show how necessary it is to have *Polypori* in various stages of growth. In the present case those specimens which have grown slowly could scarcely be determined, from the specific character drawn up from the few zoned individuals, though the relation is evident at once to the eye.

* H. *Gunnii*, Berk.—*Drumm.* n. 153.

On flooded gums. A rare species.

* Merulius *Corium*, Fr. *Drumm.* n. 249.

* M. *lacrymans*, Schum.—*Drumm.* n. 269.

On decayed wood.

45. Hydnum *investiens*, n. sp.; totum resupinatum, latissime expansum, subiculo primum tomentoso, demum compacto glabro; aculeis mediis compressis acutis penicillatisque.—*Drumm.* n. 138.

Lining the inside of decayed "*Black-boys.*"

Subiculum rather thick, at first white, tomentose, consisting of loosely interwoven, cottony threads, at length more compact and smooth. Aculei ⅓-1 line long, compressed, sometimes very acute, sometimes very obtuse and obscurely penicillate, of a pale ochre.

This species resembles somewhat resupinate forms of H. *ochraceum*; it has, however, the habit of H. *farinaceum*, but the aculei are much larger. In one specimen the aculei are much elongated, darker, and extremely acute. "It grows," says Mr. Drummond, "inside of decaying trunks of Black-boy. The outer crust of the Black-boy, charred as it always is and cemented together with gum, affords little nourishment to any vegetable, but the pith is of a different description. The fungus arranges itself inside of the outer covering, but receives its nourishment from the pith. Where it grows it is entirely in the dark."

46. H. *dispersum*, n. sp.; totum resupinatum; subiculo tenui ceraceo demum evanescente; aculeis mediis basi fasciculatis compressis apicibus subulatis.—*Drumm.* n. 207.

On very decayed wood.

Forming long patches. Subiculum very thin, ceraceous, but frequently obsolete or entirely evanescent. Aculei fasciculate at the base, compressed, subulate above, about ⅓ a line long, tawny when dry, but probably white and transparent species at first somewhat resembles *Polyporus vaporarius*, but it is a true *Hydnum*, and very distinct, though difficult to define in words.

* Thelephora *caryophyllæa*, Fr.—*Drumm.* n. 200.

48. Stereum *illudens*, n. sp.; coriaceum subrigidum, pileo effuso reflexoque zonato radiato-plicato hirsuto spadiceo, hymenio lævi glabro carneo rufo.—*Drumm.* n. 158.

On sticks, &c. Common.

Pileus effused behind, with the margin reflected, about 1 inch long and several inches in breadth from the confluence of many individuals. Coriaceous, rather rigid zoned clothed with a short hairy pile, often plicate in young specimens, of a rich brown, becoming grey in the older parts, or when the outer coat has vanished dark brown. Hymenium cracked, smooth, reddish-brown, with frequently a flesh-coloured bloom.

This species is intermediate between S. *purpureum* and S. *spadiceum*, but is distinct from either. The hymenium is nearly of the same colour with that of S. *quercinum* with a beautiful flesh-coloured bloom.

* S. *purpureum*, Fr.—*Drumm.* n. 281.

* S. *hirsutum*, Fr.—*Drumm.* n. 159, 208.

* S. *rubiginosum*, Fr.—*Drumm.* n. 161.

49. Auricularia *minuta*, n. sp.; gregaria; pileis minutis effuso-reflexis lobatis; extus fulvo-umbrinis hispidulis; hymenio lævi flavo-griseo.—*Drumm.* n. 163.

On dead sticks.

Pilei 3 lines broad, effused behind, with the lobed convex border reflected, tawny umber, zoned clothed with short, hispid pubescence. Hymenium smooth, pruinose, of a yellowish grey, frequently proliferous. It is only in perfect specimens that the zones are visible. This is a minute and obscure species, but cannot be confounded with others. The specimens, though so small have passed through every stage of growth. In age it becomes bleached.

50. Corticium *radicale*, n. sp.; pileo crassiusculo intus

albo reflexo plano strigoso albido-fulvo; hymenio glabro rimosulo pallidé fulvo demum fusco; margine sterili tomentoso.—*Drumm.* n. 162.

At the base of living shrubs.

Pileus ¾ of an inch long, 1¼ inch broad, effused at the base, and surrounding the matrix, broadly reflected above, clothed with fasciculate, tawny, strigose hairs; substance rather thick, white margin slightly lobed, thin. Hymenium minutely cracked, tawny when fresh, pale brown when dry; not extending to the edge, which is pale and tomentose.

A very distinct species from any with which I am acquainted.

51. C. *vinosum*, n. sp.; resupinatum vel breviter reflexum purpureo-fuscum tenue, medio rimoso-areolatum subtiliter setulosum: margine pallidiore angusto velutino.—*Drumm.* n. 160.

On bark.

Forming broad confluent patches many inches long and broad, when fresh of a dark claret-purple, purple brown when dry; generally altogether resupinate, but occasionally slightly reflected, with the free surface grey and fasciate, thin, but partially separable from the matrix, much cracked in the centre, and exposing in the cracks the pallid internal stratum, clothed with very fine minute bristles; margin waved, velvety hymenium obliquely cup-shaped, slightly lobed, sparingly wrinkled and pitted within. Spores oblong, sometimes curved.

A very distinct species, with the habit of a *Peziza*, but a most decided *Guepinia*.

53. Clavaria *setulosa*, n. sp.; ochracea, pusilla, stipite brevi irregulariter diviso; ramis compressis furcatis obtusis vel flabellatis pubescentibus.—*Drumm.* n. 199.

On the ground.

About 1 inch high. Stem short and indistinct, compressed with two or three irregular main divisions, and again forked or flabellate, with the tops obtuse; ochraceous, clothed with patent, scattered, hispid pubescence, which under a lens is found to consist of little bundles of filaments, which are compact at the base, but penicillate above.

In habit it resembles *Clavaria pratensis*.

*C. *Botrytis*, P.—*Drumm.* n. 197.

54. Calocera *Guepiniodes*, n. sp.; pusilla, erumpens, variabilis, stipite compresso, sursum palmato.—*Drumm.* n. 204.

On rotten wood.

Bursting forth from the decayed wood, in which it makes a little round hole. Stem compressed, divided above in a palmate manner, with a few very short obtuse branches, and those of a red-brown; or divided at once into two or three spathulate branches, which are yellowish and the stem very dark.

These two forms, however different at first sight, belong to one species. There is a state exactly intermediate. The resemblance of the second especially to *Guepinia* is very great; but the hymenium goes quite round the branches, and there is no velvety down.

* Tremella *mesenterica*, Retz.—*Drumm.* n. 193.

* T. *foliacea*, P.—*Drumm.* n. 93.

* Exidia *glandulosa*, Fr.—*Drumm.* n. 194, n. 123 (*in part*).

55. Dacrymyces *rubro-fuscus*, n. sp.; pusillus rubro-fuscus; stromate sinuato gyroso; sporis magnis globosis ovalibusve

simplicibus vel uni-biseptatis (Tab. 1, f. 1.)—*Drumm.* n. 212, n. 225 (*in part*).

On decayed branches, either on the wood itself or growing from some Sphæria.

Stroma scarce 1 line high, of a rich red-brown when moist, black when dry: flocci slender, short, very sparingly branched; spores globose or oval, often distorted, simple or with a single transverse septum, and sometimes one of the cells is divided by a vertical septum.

Allied to D. *moriformis*, in which also the spores are large, more or less globose, and either really or spuriously septate.

Tab. I., f. 1^0—*a.* Flocci of Dacrymyces rubro-fuscus: *magnified.* *b.* Spores in various stages of growth: *magnified.*

56. Secotium *melanosporum.* n. sp.; pileo irregulari subgloboso umbilicato; primitus infra furfuraceo, superne glabro; margine rotundato; velo appendiculato marginali; stipite elongato subæquali; hymenio stipite percurso; sporis nigris. (Tab. I. f. 2.)—*Drumm.* n. 180.

On the ground.

Growing in clusters. Pileus 2-3 inches or more in diameter, subglobose, umbilicate at first, sparingly furfuraceous except at the apex, margin very obtuse and rounded; veil attached in laciniate fragments to the margin. Stem 2-2½ inches high ⅓-½ an inch thick, solid, passing completely

57. S. *coarctatum*, n. sp.; minutum. olidum; pileo obovato umbilicato, margine acuto coarctato; velo marginali lacerato appendiculato; stipite gracili; hymenio stipite percurso; sporis ochraceis minutis demum cinereis. (Tab. II. f. 3)—*Drumm.* n. 181.

On the ground.

Pileus ½-¾ of an inch broad, ½ an inch high, obovate, umbilicate, much constricted below, and pressed to the stem; margin acute; veil marginal, appendiculate. Stem ¾ of an inch high, scarce a line thick, solid, passing completely through the mass of the hymenium, expanding above. Hymenium pressed close to the stem, but unconnected with it except above, lined with a delicate silky stratum. Spores minute, obovate with a globose nucleus, and a very obscure peduncle, at first ochraceous, at length cinereous.

Tab. I. f. 3. *Secotium coarctatum; nat. size.*—*a.* Section slightly *magnified.* *b.* Spores highly *magnified.*

A third species apparently of this curious genus is found in the Swan River district, and is considered a great delicacy for the table. Of this I have seen no perfect specimen. If a little fragment which occurred among other fungi belongs to it, the spores (as mentioned above) agree in form with those of S. *Gueinzii*; and from a rough sketch sent by Mr. Drummond, it must differ very greatly from the other species; but in the uncertainty whether the fragment alluded to really belongs to it, I do not venture to describe or name it. There is also a fragment of what appears to be a species of *Hymenogaster*, with oblong yellowish spores. It occurred amongst some duplicates, without any indication or notice whatever, and I am therefore obliged to wait for further information.

* Geaster *striatus*, D.—*Drumm.* n. 173.

On the ground. A very large variety.

* G. *minimus*, Schwein.—*Drumm.* n. 175.

58. G. *Drummondii*. n. sp.; peridio exteriori simplici rigido explanato multipartito intus brunneo; laciniis æqualibus; interiori sessili, disco plano, ore conico plicato. (Tab I. f. 4).

On the ground.

Exterior peridium rigid, multipartite, lined with a dark-brown smooth coat. Divisions about 8, mostly equal acute. Interior peridium perfectly sessile, very minutely scabrous, pale; disc plane, aperture conical, plicate. Capillitium and spores brown.

This species differs from G. *umbilicatus* in its rigid outer peridium, larger spores, and the disc of the aperture not being so decidedly umbilicate. It is more nearly allied to G. *ambiguus*, Mont.; but in that the outer peridium is not equally divided, and the lining of it thicker and pale. It agrees with it in the size of the spores. The peridium of G. *ambiguus*, in the only specimen which I possess, is very scabrous. I have no doubt, from a series of specimens which I have seen in Dr. Montague's herbarium, of the distinctness of the two species, though it is difficult to indicate the exact differences. It is a small species, scarcely exceeding an inch in diameter when expanded.

Tab I. f. 4. Geaster Drummondii; *nat size.*

*G. *rufescens*, P.—*Drumm.* n. 174.

At once distinguished from G. *hygrometricus* by its smooth, minute spores.

59. Bovista *lilacina*, Mont. and Berk.; turbinata subtus plicata primum pallide ochracea demum sublilacina; capillitio sporisque lilacinis.—*Drumm.* n. 167.

60. Mycenastrum *phæotrichum*. Berk. in Hook. Lond. Journ. of Bot., Vol. II. p. 418.—*Drumm.* n. 166.

On the ground.

In an early stage of growth the whole internal mass to the very base is formed of little sinuous cavities, which do not exhibit the least trace, as far as I can find, of the threads which are so peculiar in a later stage of growth. The European species appears to be figured by Sterbeeck, tab. 28, D.

* Lycoperdon *gemmatum*, Fr. *Drumm.* n. 172, 250.

* Tulostoma *fimbriatum*, Fr.—*Drumm.* n. 179.

* Scleroderma *geaster*, Fr.—*Drumm.* n. 168.

* S. *vulgare*, Fr.—*Drumm.* 169.

* Polysaccum *Pisocarpium*, Fr.—*Drumm.* n. 170.

* P. *crassipes*, Dec.

Var. *australe*.—*Drumm.* n. 171 (in part).

This agrees in every respect with European specimens, except that the spores are paler, with a slight tinge of yellow. It is equally variable in form, the stem being sometimes nearly obsolete. It is possible that it may be a distinct species, but the only difference visible in the dried specimens is that just mentioned, and that may depend on extraneous circumstances.

* P. *turgidum*, Fr.—*Drumm.* n. 171 (in part).

On the ground with the last.

Distinguished by the stem being divided at the base and the brown spores.

61. Mitremyces *luridus*, n. sp.; pusillus subsessilis; peridio externo subsessili, ore nigro. (Tab. I. f. 5).—*Drumm.* n. 182.

On sandy soil.

Outer peridium globose 1-3rd of an inch in diameter, of a dingy yellow brown, scabrous, with small black scattered granules, supported by a short, black, anastomosing mass of tendon-like bodies, which collect the grains of sand amongst which it grows. Aperture with about 4 or 5 teeth, which are not coloured as in the other species. Inner peridium pale yellow, or sometimes pure white. Spores elliptic with one or two nuclei, mixed with a few filaments.

Resembling much Mitremyces *fuscus*, Berk. a Tasmanian species. It is, however, very much smaller, and bears nearly the same relation to it that M. *Junghunii* does to M. *lutescens*. The teeth have not, as in the other species, the slightest tint of cinnabar.

Tab. I. f. 5. Mitremyoes luridens ; *nat. size.—a.* Section showing the internal sac, still full of spores: *magnified.—b.* Spores and flocci ; highly *magnified.*

* Lycogala *epidendrum*, Fr.—*Drumm.* n. 202.

On charred wood.

62. Didymium *scrobiculatum*, n. sp.; sessile subconfertum difforme; peridiis compressis albis scrobiculatis subfurfuraceis; floccis albis, sporis compactis nigris.—*Drumm.* n. 263.

On the charred surface of "*Black-boys.*"

Forming little scattered tufts, peridia when solitary subglobose, but more frequently crowded, though not densely, compressed and irregular, sessile, but not adnate, wrinkled, white slightly furfuraceous; flocci membranous, white, spores globose, compact, jet-black; columella wanting.

Allied to Didymium *cinercum*, but far less adnate. Indeed there is occasionally a spurious attempt at a stem. Sometimes the surface is covered with raised dots rather than

Spores globose, yellow. Stem attenuated upwards, very slender where it gives off the peridium.

A very elegant species, remarkable for its yellow flocci.

* Craterium *pedunculatum*, Trent.—*Drumm.* n. 259.

On decayed leaves.

* Stemonitis *fusca*, Roth.—*Drumm.* n. 209, 272 (in part).

* Arcyria *incarnata*, P.—*Drumm.* n. 282 (in part).

64. Licea *applanata*, n. sp.; conglomerata, peridiis brevissimis arcte connatis rufis; sporis magnis crocatis.—*Drumm.* n. 188.

On dead sticks.

Forming roundish patches which are scarlet when young, but of a bright liver brown when mature, consisting of minute very short crowded peridia, invisible to the naked eye, which contain saffron-coloured spores, intermixed with a few filaments; spores globose, much larger than in L. *fragiformis* and *cylindrica*.

* Cyathus *vernicosus*, Dec.—*Drumm.* n. 228.

On rotten wood.

64. Clathrus *pusillus*, n. sp.; pusillus, elongato-obovatus, columnis præcipue ad apicem reticulum amplum efformantibus. (Tab. I, f. 6.).—*Drumm.* n. 176.

On the ground.

Volva nearly cylindrical or obovate ½-¾ of an inch in diameter; columns 1½ inches or more high, wrinkled transversely, of a beautiful bright ruby red, springing from four to eight together from a point at the base, and forming by their juncture above a net with subpentagonal meshes, extremely brittle and scarce able to support their own weight. Hymenium attached to the inner side of the columns and network through their whole extent, except occasionally at the base. Spores minute, oblongo-elliptic.

This beautiful species resembles in many respects *Colus hirundinaceus*, Caval. and Sech. and goes very far to prove that their genus is not well founded, for there is no reason to think that any material difference would be presented by the young plant. The specific difference consists in the much more ample meshes, and the fructifying mass is in the Toulon plant confined to the network, whereas in the present case it extends more or less down the columns.

The specimens vary extremely. In the larger the network resembles closely that of *Clathrus cancellatus;* in the smaller specimens it is confined to the apex, but specimens occur in which the six ribs merely unite above, and thus form five oblong meshes, as in *Laternea.* The most perfect form Mr. Drummond considers to be that in which a single pentagonal mesh is formed at the confluence of the five columns.

Tab. I, f. 6. Clathrus pusillus; *nat. size.*

An opportunity has lately been afforded, through the kindness of Dr. Broomfield, of examining a young specimen of *Clathrus cancellatus* from the Isle of Wight, (Tab. I. f. 7). This shows the correctness of Micheli's figure, the substance of the volva being divided into compartments answering to the meshes, so that in a vertical section a septum answers more or less accurately to each column, as represented by Micheli. The fructifying mass is not confined, as in *Clathrus crispus,* to the angles of the meshes, but extends over the whole of the internal surface of the columns and network, being interrupted only here and there by obscure passages running from the central mass of jelly. *Clathrus cancellatus* and C. *crispus,* then, are generically distinct, and the sectional

Tab. I. fig. 7, *a*, section of young *Clathrus cancellatus* slightly magnified; *b*. portion of hymenium springing from one of the sides, highly magnified.

66. Ileodictyon *gracile*, n. sp.; costis tenuoribus lævibus. (Tab. II. fig. 8).—*Drumm.* n. 177.

On the ground.

Volva globose, showing, as in *Clathrus*, probably from internal partitions, traces of the reticulations, splitting into about four lobes, furnished at the base with a few fibrous roots; about 1½ inch in diameter; network far exceeding the volva; meshes obscurely hexagonal; ribs ½-1 line broad, flat, smooth, white, entirely covered internally by the hymenium; spores minute, oblong, elliptic, larger than in *Clathrus pusillus*, with a linear nucleus.

The genus *Ileodictyon* is distinguished from *Clathrus* principally by the tubular not cellular ribs, and certain differences in the volva, which are 'not evident in the dried specimens before me. The Swan River species is much less, and the ribs scarcely more than one-fourth as thick as those of the New Zealand species, nor are they crisped and wrinkled. The size of the meshes varies. Messrs. Tulasnes have made a beautiful analysis from specimens in spirits of the edible species, which will I hope soon be published. I do not know that this species is eaten by the natives.

Tab. II. f. 8. Ileodictyon gracile; *nat. size.*

67. Phallus *curtus*, n. sp.; capitulo adnato cum stipite flavo subæquali volvam oblongam vix excedente.—*Drumm.* n. 178.

On the ground.

Volva oblong, furnished with a few fibrous roots at the base bursting by two or three irregular lobes; stem ⅓ of an inch high, with a little membranous cup at its base. Head ¾ of an inch high, oblong, rising scarcely ½ an inch above the volva, smooth, not reticulated. Spores minute, oblong-elliptic. Extremely fœtid.

Allied apparently to *Phallus caninus.*

* Stilbum *erythrocephalum*, Ditm.

On dung.

* Excipula *strigosa*, Fr. *Drumm.* n. 215.

* Trichoderma *viride*, P.—*Drumm.* n. 212 (in part).

* Sepedonium *chrysospermum*, Lk.—*Drumm.* n. 225 (in part.

68. Mystrosporium *pulchrum*, Berk. and Corda. Effusum olivaceum; floccis albis rugosis furcatis trifidisque; aliis tenuioribus fertilibus; sporis oblongis è lobis globosis efflatis, scabriusculis. (Tab. II. f. 9).—*Drumm.* n. 270.

On rotten wood, accompanying *Merulius lacrymans.*

Forming olive patches, about an inch broad. Flocci of two kinds; some irregularly branched, forked or trifid, often paler, irregular, and ending in two or three little tubercles, others finer, sparingly branched, sometimes septate, giving off short erect threads, which bear the spores. Spores compound, consisting of a number of globose slightly-scabrous lobes. In an early stage of growth, they consist of a single row of cells, which gradually becomes double; ultimately, the cells swell out and become globose. It does not appear that the lobes separate, as the old decayed spores are to be found amongst the flocci.

The habit of this plant is exactly that of *Helicosporium vegetum.*

Tab. II. f. 9. *Mystrosporium pulchrum*, magnified; *a.* spores, highly magnified.

69. Peziza *Drummondii.* n. sp.; media, cupulæformis sessilis, subtus costis validis terram intrantibus suffulta, spadicea; hymenio brunneo. (Tab. II. f. 10).—*Drumm.* n. 183.

On the ground.

Cup ¼ of an inch broad, sessile, bright brown, farinaceous, supported beneath by strong compressed ribs, which penetrate into the soil, and when dry are exceedingly hard and almost horny. Hymenium brown. Asci linear elongated slightly attenuated below; spores elliptic.

Tab. II. f. 10. Ascus of P. *Drummondii*, with sporidia; highly magnified.

A very pretty species, allied to *Pez. Acetabulum.* A species on wood, marked n. 210, was found by Mr. Drummond, allied to P. *cochleata*, and possibly a form of it.

* P. *melaloma*, A. and S.—*Drumm.* n. 189.

On burnt earth and charcoal.

* P. *rutilans*, Fr.—*Drumm.* n. 190.

On the ground.

There is also another *Peziza*, n. 186; apparently P. *applanata*, Fr.

* Peziza *scutellata*, L.

* Aseobolus *furfucaceus*, P.

On cow dung, with another very minute species, which I cannot determine.

* Sphæria *punctata*, Sow.—*Drumm.* n. 187.

On horsedung.

The disk in the Swan River specimens is reddish, and the perithecia more prominent than usual, but there is no specific difference.

* S. *rubricosa*, Fr. El. 2, p. 63.—*Drumm.* n. 201.

On dead wood.

As the specimens grew on dead wood, they are more freely developed than those which I possess on bark from Guiana. The wood is tinged of a pale lilac; there is a cottony lilac mycelium, and the stroma is flat. In old specimens the ostiola are much elongated, and project beyond the stroma. There is no difference in the asci or sporidia.

* S. *multiformis*, Fr.

70. S. (Lignosæ) *capnodes*, n. sp.; effusa interrupta applanata lævis fuliginea intus nigra, ostiolis punctiformibus prominulis; peritheciis immersis oblongis; sporidiis ellipticis fuscis.—*Drumm.* n. 218.

On dead wood.

Forming elongated, more or less interrupted, erumpent patches, many inches long, plane, slightly raised, black, with a smoky bloom; black within, brittle and carbonaceous, surrounded by a portion of the elevated wood; perithecia crowded, immersed, oblong; ostiola minute papillæform; sporidia elliptic, dark brown; wood marked within by a deeply-penetrating black line.

Resembling in habit *Sphæria stigma*, but differing in its dark stroma, smoke-like bloom, and above all, in its elliptic, brown, not curved, and pellucid sporidia. The whole plant looks exactly as if it had been smoked over a candle.

A very curious new genus was sent by Mr. Drummond amongst the *Fungi*, allied to *Collema*, but with the outward habit, and in some respects the structure, of a *Dothidea*. One species is identical with a plant gathered by Dr. Montagne annulata, annulis interdum quadrate cellulosis, pellucida, ascis sphæricis inclusa.

1. Myriangium *Duriæi*, Mont. and Berk. majus, hæmisphericum, subnitidum.

Hab. In Pyr. Or. (*Montagne*), ad corticem *Mori albi*. *Lentisci* in Algeriâ (*Durieu*); in Australia in Prov. dictâ Swan River (*Drummond*).

2. Myriangium *Montagnei*, Berk. minus, irregulare, atropurpureum, subtiliter tomentosum. *Drumm.* n. 262.

Hab. Ad corticem in Australia in Prov. dictâ Swan River. *Drummond.*

The second species resembles extremely *Dothidea examinans*, Berk. and Mont.; but not only are the sporidia quite different, the cells containing a single ascus only, but the whole structure of the plant is that of *Collemaceæ*.

The genus bears a certain external resemblance to *Tympanis*, without, however, the least affinity. It is more nearly allied to *Arthonia*, but differs from it in the structure of the thallus and nucleus. It is again allied to *Paulia*, Fée (Linn. vol. x. tab. 4), but the fructification is different; and also to *Omphalidium*, Mey. and Flotw., in which the asci and sporidia have a very dissimilar form, and the structure of the thallus is quite unlike. Complete figures will shortly be published by Dr. Montagne.

Description of a New Genus of PAPAVERACEÆ, *detected by the late* DR. COULTER, *in California*; *by* W. H. HARVEY, M.D., M.R.S.A., &c.

With a Plate.—(TAB. III.)

In the collection brought by the late lamented Dr. Coulter from California, I was immediately struck by the singularity of a fine Papaveraceous plant, which I soon ascertained to be distinct from any hitherto recorded from that country; and a closer examination and conference with Sir W. J. Hooker, proved it to belong to a new and curious genus, closely allied indeed to *Papaver*, but differing in its calyx, the form of its capsule, and the disposition of the stigmata. Had there been no genus *Coulteria*, it is to this that I should have affixed the name of Dr. Coulter; but De Candolle having in this matter long anticipated me, I desire, as the next greatest respect that I can pay to Dr. Coulter's memory, to bestow upon this fine plant of his discovery, the name of his most distinguished and one of his most intimate friends. I therefore propose to inscribe it to the REV. DR. T. ROMNEY ROBINSON, the Astronomer of Armagh; not that I have the vanity to suppose that my doing so can add any ray to the name of Romney Robinson, a name already caught up among the stars; but simply to indulge the wish, above expressed, of honouring Dr. Coulter's memory through his friend, and thus linking the names of Coulter and Romney Robinson as closely in the annals of science as their friendship was strong and indissoluble. I regret that an elder *Robinsonia** prevents me from making use of Dr. Robinson's family name; but in calling the present genus ROMNEYA, I follow a sufficiently established precedent.

The following are its characters:

ROMNEYA. *Harv.*

Calyx triphyllus; foliolis gibbosis, apiculatis, obliquis, coria-

vel pinnatifida. Flores magni, albi, speciosi, ramos terminantes.

Romneya *Coulteri.* Harv.

In Californiâ boreali legit *T. Coulter*, 1832.

Herba elata (perennis? basi suffruticosa?). Caulis ramosus, flexuosus, obsoletè anguloso-compressus, glaucus, lævis, vel apice parcissimè et minutè setiger, glaber. Folia petiolata, glabra, glauca, margine setoso-ciliata; infima pinnatifida, trijugatim laciniata, laciniis inferioribus lineari-lanceolatis, superioribus deltoideis, lobo terminali ovato, laciniis omnibus apice callosis; superiora plerumque triloba, lobis lateralibus lanceolatis, minoribus, apice callosis, terminali magno ovato, integro v. apice trifido et iterum, calloso; summa nunc trifida, nunc lanceolata: omnia patentia, sparsa, et subdistantia. Petiolus folio quadruplo brevior, semiteres, marginatus, parcissimè setoso-ciliatus, sensim in folium ampliatus. Flores ad apices ramorum corymbosorum solitarii, magni. Bracteæ propriæ nullæ, spuriæ (vel folia summa minuta) sparsæ. Calyx triphyllus, glaber, caducus: sepala vix unciam longa, æstivatione imbricata, concava, dorso obtusa, apice mucrone rigido recurvo acuto, coriacea, ovata, ad unum latus apicem versus alâ magnâ, membranaceâ, venosâ, pellucidâ, obliquâ aucta. Petala sex, biseriata, alba, 2½ uncias longa, latè obovata, decidua, tenue membranacea, basi crassiora. Stamina numerosissima, in seriebus plurimis juxta torum pulviniformem hypogynè inserta; filamenta tenuia filiformia, exteriora breviora apice obtusa cum mucrone; antheræ lineares, subspiraliter tortæ, obtusæ filamentorum mucronibus affixæ. Ovarium vere ovatum, v. ovato-oblongum, apice angustatum, uniloculare, v. spuriè 6-12-loculare, setis rigidissimis crassis aureis densissime vestitum. Placentæ stigmatibus oppositæ, alteræ semiseptiformes, alteræ in septa spuria completa conversæ. Ovula numerosa. Stigmata 6-12, carnosa, crassa, triquetra, subulata, ad basin tantum coalita, erecta v. suberecta, nec stellatim patentia. Capsula (immatura tantum visa) ovata apice angustata, setis rigidis aureis erectis imbricatis vestita.

TAB. III. *Romneya Coulteri.*—*Fig.* 1. Sepal. *f.* 2. Stamen. *f.* 3. Transverse section of immature fruit: *magnified.*

W. H. H.

Dec. 12, 1844.

Characters of two New Genera of CRUCIFERÆ, *discovered by the late* DR. COULTER, *in California.*—*By* W. H. HARVEY, M.D., M.R.S.A., &c.

With Plates.—(TABS. IV. *and* V.)

LYROCARPA. *Hook. et Harv.*

Calyx cylindricus, clausus, tetraphyllus, foliolis linearibus, duobus lateralibus basi gibbis. Petala 4, hypogyna, unguiculata, unguibus latis, spathulatis, membranaceis, laminis angustissimis a latere involutis. Stamina 6, tetradynama, libera, edentula. Ovarium obovatum, stigmatibus duobus patentibus coronatum. Stylus nullus. Silicula a latere compressa, panduriformis, apice biloba, bivalvis, valvis compressis dorso acutis, nec alatis. Semina in loculis 6-8, biseriata, pendula, marginata. Embryonis ex albuminosi cotyledones radiculæ accumbentes. Testa e cellulis magnis hyalinis formata.—*Herba Californica, perennis, ramosa, vix suffruticosa, pilis minutis stellatis in omnibus partibus*

v. a latere compressus, stellato-pilosus; sepalis lateralibus convexis basi saccatis, antico posticoque planis, angustioribus, basi simplicibus. Petala unguibus latis, spathulatis, membranaceis, uninerviis, calycem excedentibus, laminis angustis elongatis, lanceolatis, acutis, siccitate sæpe a latere involutis, spiraliter tortis. Stamina tetradynama, ovario multo longiora. Ovarium parvum, obovatum, densè stellato-pilosum, stigmatibus valde hirsutis divergentibus coronatum. Silicula ½-¾ unciam, oblonga, panduriformis, a latere valde compressa, basi rotundata, apice biloba, lobis patentibus obtusis, juxta margines laterales constricta? Semina testâ hyalinâ e cellulis magnis conflata, plano-compressa, margine subalata, in loculis 6-8, biseriata.

This genus is sufficiently characterized by the remarkable fiddle-shaped silicule and the singular petals. The specimens consist of branches broken off within a few inches of the apex; and it is impossible to judge from them what may be the proximate size or the habit of the plant.

Tab. IV. *Lyrocarpa Coulteri*, with flowers and fruit. *Fig.* 1. Flower. *f.* 2. Petal. *f.* 3. Stamens and pistil. *f.* 4. Fruit, scarcely mature, from which the valves are removed. *f.* 5. Seed. *f.* 6. Transverse section of ditto; more or less *magnified.*

Dithyrea. *Harv.*

Calyx cylindricus, clausus, tetraphyllus, foliolis linearibus, simplicibus. Petala 4, lineari-spathulata, basi ampliata. Stamina 6, tetradynama, libera, edentula. Stylus brevissimus; stigma bilobum. Silicula sessilis, biscutata, basi et apice emarginata, valde a latere compressa, margine incrassata. Semina in loculis solitaria, compressa, immarginata, horizontalia. Embryonis albuminosi cotyledones planæ oblongæ radiculæ descendenti septum spectanti accumbentes. — *Herba* Californica, *stellato-pubescens; foliis repandis; floribus luteis* (?) *in racemis terminalibus simplicibus dispositis, pedicellis basi biglandulosis.*

Dithyrea *Californica*. Harv. (Tab. V.)

In California legit *T. Coulter* (N. 37.)

Exemplaria manca. Caulis herbaceus, teres, adscendens? v. erectus, pilis minutis stellatis sparsim coopertus. Folia petiolata, basi cuneato-angustata, ovata v. oblonga, obtusa, margine subintegerrimo v. repando-dentato, dentibus obtusissimis obsoletis utroque latere duobus v. tribus. Racemi terminales, densi, ebracteati, simplices, multiflori. Pedicelli patentes, calyce breviores, basi glandulis duabus instructi. Flores parvi, ut videtur aurei. Calyx densè stellato-tomentosus, subcanescens, cylindricus, clausus, e foliolis quatuor linearibus obtusis subæqualibus conflatus. Petala 4, lineari-spathulata, obtusa, medio vix angustata, ungue cum laminâ confluente, basi ampliata, subcordata, membranacea. Stamina 6, tetradynama; filamenta tenuissima, ovario multuplo longiora. Stylus brevissimus, stigmate magno bilobo terminatus. Silicula biscutata, basi et apice emarginata, sessilis margine incrassato, densè ciliato, disco compressissimo parcè hispido. Semen in utroque loculo unicum, compressum, immarginatum, horizontale. Radicula descendens! septi basin spectans, accumbens.

This genus scarcely differs from *Biscutella*, with which it might perhaps, without much violence, be united. It is distinguished by the erect sepals, forming a close calyx, the absence of claws to the petals (which in *Biscutella* are often

HEPATICÆ ANTARCTICÆ, SUPPLEMENTUM: *or Specific Characters, with brief descriptions, of some additional species of the Hepaticæ of the Antarctic Regions, New Zealand and Tasmania, together with a few from the Atlantic Islands and New Holland; by* J. D. HOOKER, M.D. R.N., & THOS. TAYLOR, M.D.

(*Continued from Vol. III. p.* 582.)

(Plagiochila, *Nees.*)

1. ***Jungermannia connexa***, n. sp.; caule subcæspitoso, surculis erectis compressis apice incrassatis incurvisque, foliis arcte imbricatis erectis oppositis basi subconnexis apice subrecurvis orbiculatis supremis subdenticulatis cæterum integerrimis, perigoniis terminalibus oblongis spicatis.

HAB. New Zealand. (*A. Cunningham.*)

Tufts loose, yellowish-olive. Stems scarcely one inch high; shoots simple, consisting of leaves in a rapidly increasing series, nodding or incurved at the top; margins of the leaves subreflexed at their summits, slightly joined at their bases. Perigonial shoots nearly equalling in breadth the barren. No calyx observed. The present can be confounded only with *Plagiochila Brauniana*, Lind. The leaves are more closely imbricated, the shoots are wider and the perigonia more considerable.

2. ***J. anisodonta***, n. sp.; caule cæspitoso erecto subsimplici, foliis distantibus erecto-patentibus oblongis arcuatis deflexis inæqualiter emarginato-bifidis segmento inferiori apice dentato superiori decurrente margine recurvo.

HAB. St. Helena.

Tufts wide, dense, pale olive-green. Stems 1½ inch high, sparingly branched, the branches erect. Leaves rather distant, complanate, obovate, emarginate, the segments acute, entire except near the top of the inferior margin which is subdenticulate. This species may be known from *Plagiochila* *securifolia*, Lind., by the more distant and longer leaves, which are decidedly emarginate, with acute segments.

3. *J. campylodonta*, n. sp.; caule laxe cæspitoso erecto subsimplici, foliis distantibus erectiusculis obovato-rotundatis inæqualiter emarginato-bidentatis segmentis subincurvis acuminatis cæterum integerrimis margine superiori vix decurrente.

HAB. St. Helena.

Tufts loose, dark brown, the younger olive-coloured. Stems scarcely 1 inch high, very sparingly branched. Leaves from a narrow base rotundato-quadrate, divided by an oblique sinus into two unequal spines, of which the anterior is much the larger, the segments pointing to one another.

This is very like our *Jung. anisodonta*, from the same island. The leaves are shorter, wider above, by no means decurved, while their superior margin is scarcely decurrent, and less recurved.

(Jungermannia, *Nees.*)

4. *J. obtusata*, n. sp.; caule laxe cæspitoso erecto subramoso apice subincurvo, foliis imbricatis erectiusculis secundis deflexis tumidis oblongo-rotundatis emarginatis segmentis inæqualibus incurvis obtusiusculis integerrimis.

Hab. Falkland Islands.

Dusky pale-olive. Leaves involute along the upper part of the stem. Stipules with a very shallow notch. Allied to our *Jung. otiphylla*, (vid. vol. 3, p. 466) whose leaves and stipules, however, are entire.

6. *J. biapiculata*, n. sp.; caule adscendente subsimplici apice incurvo subcæspitoso, foliis imbricatis patenti-deflexis secundis concavis e basi lata laxe amplexanti oblongis bifidis segmentis lanceolatis apiculatis integerrimis, calyce terminali oblongo-ovato plicato apice coarctato multifido ciliato-denticulato.

Hab. Ascension Island.

Stems loosely cæspitose, rising erect among mosses, slightly curved above, pale olive-green, but the very young shoots sometimes dark green; branches few. Leaves nearly squarrose, yet homomallous, suddenly apiculate, their cellules very minute, the bases of the leaves concave and loosely embrace three fourths of the stem. Perichætial leaves erect, closely adpressed to the calyx.

Very closely allied to *Jung. piligera*, Nees, from Java, which has the segments of its leaves more unequal, their apiculus less considerable, while the cellules are still more minute.

(Lophocolea, *Nees.*)

7. *J. multipenna*, n. sp.; caule procumbente implexo ramoso, foliis distichis imbricatis patentibus obovatis margine antico gibbosis subemarginatis decurrentibus, stipulis bifidis segmentis lanceolatis basi hinc dentatis, calyce oblongo acutissime trigono ala superiori latissima ciliato-dentato.*

Hab. Lord Auckland's group.

Tufts flattish, pale dusky brown. Stems about 1 inch long, irregularly branched. Leaves somewhat in the shape of a bird's wing, that is, oblong with a shoulder in front, their outline towards the top very irregular; scarcely notched, an odd obtuse tooth is sometimes visible, each pair is decurrent to the same point of the stem. Stipules subquadrate. Of the upper leaves, near to the calyx, the margin on one side is often confluent or connate with the stipule. Perichætial leaves erect, dentate.

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* By an accidental error, this character and description, which ought to have appeared under (J. Lophocolea) *multipenna*, vol. III. p. 381, were replaced with a repetition of the character and description of *J. intortifolia.*

Our plant bears so strong a resemblance to *Jungermannia heterophylla*, Schrad., that it is with some distrust now separated, on account of the more rotundate figure of the leaves, and their larger cells and because of the longer calyx whose lips are more frequently and more deeply toothed, as are the perichætial leaves.

8. *J. inflexispina*, n. sp.; caule cæspitoso adscendente flexuoso, foliis laxis erecto-patentibus oblongis concavis emarginato-bifidis segmentis lanceolatis acuminatis introflexis integerrimis, stipulis lanceolatis bipartitis utrinque subunidentatis.

HAB. King George's Sound, (*A. Cunningham.*)

Tufts dense, short, the older parts purplish-brown, the younger paler. Stems scarcely half an inch high, slender, variously bent. Leaves with an amplexicaul base, concave, the summits bent in towards the stem, the margins of the segments slightly recurved. Stipules scarcely wider than the

Plants in straggling, prostrate, pale patches. Stems scarcely 1 inch long, but slightly and irregularly branched. Leaves touching one another at their bases, rounded at their tops or with a very shallow indentation, nearly patent, the opposite pairs joined behind the stem by the ovato-lanceolate bifid stipule. Perichætium nearly as long as the calyx, its leaves upright, adpressed. Calyx acutely trigonal, having a considerable fissure down one side. The present may be distinguished from our *Jung. reclinans* by the far larger and less imbricated leaves, by the stipule being simply bifid, (not quadrifid) and by its connecting the leaves behind the stem.

10. *J. alternifolia*, n. sp.; caule implexo procumbente vage ramoso, foliis laxis alternis patentibus planis triangulari-ovatis emarginatis decurrentibus segmentis spinoso-acuminatis cæterum integerrimis, stipulis minutis quadripartitis segmentis setaceis, calyce terminali triangulari cylindraceo ore trilabiato ciliato.

Hab. ~~New Zealand~~. Falkland Ils.

Patches dark lurid-green, shoots nearly straight. Leaves with large cells, decurrent, so that the base of one passes the upper insertion of the one next below. Perichætial leaves about half the length of the calyx, erect, concave, subciliated. Capsule roundish-oblong. Related to our *Jung. humifusa*, (vol. 3, p. 472); the emargination of the leaves, however, is far more deep, their segments longer, their bases more decurrent, and the segments of the stipules wider.

It may be here noticed of our *Jung. humifusa*, that the calyces and perigonia have been observed, since the publication of that species, on Kerguelen's Land specimens. The former are oblong-ovate, trigonal, one of the angles alate, subdentate. The perigonia are ovato-lanceolate spikes, which occur in the course of a shoot, each ventricose imbricating leaf containing an anther.

(Chiloscyphus, *Nees.*)

11. *J. retusata*, n. sp.; caule implexo procumbente subsim-

plici rectiusculo, foliis patentibus planis oblongis obtusis retusisque integerrimis hinc stipulæ minutæ setaceo-bipartitæ conjunctis.

Hab. New Zealand.

Patches loose, pale yet dusky olive-green. Stems about 1 inch long. Leaves rather remote, broadly oblong, slightly notched, on one side united with the stipule, which is not broader than the stem. Allied to *Ch. integrifolius*, Gottsche; but the leaves are more distant, shorter and wider, the stipule more compounded and the colour of the plant darker.

12. *J. biciliata*, n. sp.; caule procumbente subsimplici, foliis complanatis imbricatis erecto-patentibus late ovatis rotundatis apice biciliatis, stipulis bipartitis segmentis lanceolatis divaricatis subintegerrimis.

Hab. New Zealand.

Patches wide, pale (sometimes dusky) olive green. Stem exceeding 1 inch in length, usually simple. Leaves more curved anteriorly, having large cellules, ciliæ setaceous, usually two, very rarely with the rudiments of a third. Stipules large, their segments commonly entire, sometimes with a cilia on one side. This differs from *Chiloscyphus Endlicherianus*, Nees, by the greater size, the larger cellules, the longer and fewer ciliæ and by the larger stipules of an inch long. Leaves with patent bases, but erect points. Perichætium and calyx pale and large in proportion to the plant.

(SENDTNERA, *Endlicher*.)

14. *J. leioclada*, n. sp.; caule laxe cæspitoso erecto lævi pinnato, ramis decurvis attenuatis, foliis imbricatis convexis erecto-patentibus subrotundatis inæqualiter bilobis lobis obtusiusculis basi appendiculatis integerrimis stipulis, oblongis emarginato-bifidis segmentis obtusis integerrimis basi appendiculatis.

HAB. Ascension Island.

Tufts brownish-black, loose. Stems scarcely 2 inches high, pinnate with alternate branches, smooth or destitute of scales. Leaves loosely imbricated, the upper and more convex lobe broadly ovate, with a more remarkable linear spur or appendage at the base than that of the lower lobe. Stipules oblong, with rather an obtuse sinus, furnished with spurs at their bases, of which one is usually longer than the other. From *Jung. diclados*, Weber, this species may be known by its smaller size, less imbricated leaves, by their obtuse segments and above all by the stems being destitute of scales.

(Radula, *Nees*.)

15. *J. fulvifolia*, n. sp.; caule dense implexo procumbente subpinnatim ramoso, foliis imbricatis patentibus integerrimis lobo superiori rotundato concavo inferiori trapezoideo basi caulem versus gibboso erecto.

HAB. St. Helena, (*Dr. Greville's* Herbarium.)

Patches wide, flat, of several layers one over the other. Stems scarcely 1 inch long, subpinnate, branches distant, patent. Leaves tawny-yellow, nearly round, the upper lobe very fragile, so that on several shoots the inferior lobes alone being left cause such to appear flagelliform. Structure of the leaves dense. The inferior lobe has an ovate exterior part parallel to the stem and an interior rotundate process crossing the stem. It is difficult by characters to separate this from *Jung. complanata*, L. although it differs widely in habit. The present is smaller in all its parts, while the stem itself is thicker in proportion to the entire width of the shoots, the leaves are more round, the lower lobe, lying parallel with the stem, is longer, and by a round process embraces the stem, the cells of the leaves are more minute.

16. *J. aneurismalis*, n. sp.; **caule exili implexo vage ramoso, ramis brevibus patentibus subsecundis tenuissimis, foliis laxis erecto patentibus rotundatis exterius subangulatis concavissimis integerrimis lobo inferiori basi tumido incurvo apice recurvo adpresso angulato, perigoniis majoribus oblongo-lanceolatis spicatis apice proliferis.**

HAB. Tasmania. On *Metzgeria furcata*, L.

Creeping, scattered, pale olive-brown. Stems scarcely half an inch long, branches very slender, their leaves minute. Leaves cup-shaped, with an obtuse angle at the point most distant from the stem. The lobule has a tumid base, whilst its top lies flat on the inner part of the leaf and has a single angle pointing outwards. The perigonia occur in the course of the shoots, and are remarkably long and large in proportion to the size of the stems. The present is the minutest of the *Radulæ* of Nees yet observed, and is readily distinguished by its peculiar perigonia.

branches, and these nearly parallel to the stem, with the leaves apiculate. Again *Frull. Atchafulagæ*, Hampe, from Pennsylvania, is more minute in all its parts and has subacute leaves.

18. *J. rostrata*, n. sp.; caule exiguo repente subpinnatim ramoso, foliis subapproximatis patentibus rotundatis subapiculatis integerrimis lobo inferiori oblongo interius lanceolato-appendiculato, stipulis minutis rotundatis, perichætiis rotundato-oblongis, calyce ex angusta lineari basi obovato tubifero.

HAB. Lord Auckland's group. On *Parmelia enteromorpha*, Ach.

Patches 1-2 inches wide, reddish-brown. Stems minute. The auricle is one third of the leaf in size. The diameter of the perigonia three or four times that of the full grown shoots. Perichætial leaves oblong, incurved, apiculate, the sides of their lesser lobes reflexed, as are those of the stipular leaf; but the margins of all are entire; except that on the lesser lobe, and between it and the stipule, are one or two very short processes. Calyx twice as long as the perichætium. The present greatly resembles *Jung. lobulata*, Hook. It differs by the minuter size, by the narrower base of its calyx, by the less decidedly triangular shape of the calyx, which too is wider above and by the acute and even apiculate leaves of the perichætium.

19. *J. fugax*, n. sp.; caule procumbente pinnato gracillimo, foliis erecto-patentibus rotundato-oblongis subimbricatis integerrimis convexis, lobo inferiori majori oblongo basi truncato, stipulis minutis rotundato-ovatis bifidis perichætialibus hinc unidentatis, calyce terminali ex angusta basi obovato obtuso tricostato tubifero, perigoniis lateralibus oblongo-rotundatis.

HAB. New Zealand. On *Parmelia reticulata*, Tayl.

Minute, reddish-purple, scattered or in loose patches. Stems scarcely exceeding one quarter of an inch. The auricles nearly as long as the leaves and about half as wide.

Perigonia short, twice as wide as the shoots. Stipules scarcely wider than the stems.

20. *J. squarrosula*, n. sp.; caule procumbente subpinnatim ramoso, foliis imbricatis erecto-patentibus integerrimis rotundatis margine inferiori reflexo cellulis basilaribus majoribus lobo inferiori minuto lanceolato tumido apice deflexo, stipulis rotundato-ovatis bifidis integerrimis, calyce ex angusta basi obovato triplicato, perigoniis lateralibus rotundatis.

Hab. New Zealand. On Lichens.

Patches loose, reddish-brown. Stems scarcely 1 inch long. Leaves with the edges frequently scariose and whitish. Calyx large in proportion to the diameter of the shoot, with two acute folds above and one ventricose below, half immersed in the perichætium. Allied to *Frullania crassiuscula*, Tayl., from Demerara. It is, however, smaller, less green, and the auricles are far more slender, acuminate and deflexed.

21. *J. clavata*, n. sp.; caule procumbente vage subpinnatimve ramoso, surculis apice incrassatis, foliis imbricatis patentibus rotundato-oblongis convexis integerrimis lobo inferiori majore galeiformi acuminato decurvo, stipulis rotundatis emarginato-bidentatis subdenticulatis, calyce subimmerso obovato biplicato tubifero, foliis perichætialibus margine ventrali dentatis.

22. *J. monocera*, n. sp.; caule implexo prostrato vage ramoso, foliis subimbricatis patentibus oblongo-ovatis rotundatis planis integerrimis lobo inferiori galeiformi unispinoso deflexo, stipulis ovato-acuminatis bifidis dentatis, calyce terminali obcordato trigono angulis hirtis ore tubifero.

HAB. Van Diemen's Land. Growing among patches of *Jungermanniæ*.

Patch small, whitish-green. Stems nearly half an inch long, irregularly branched. Leaves loosely imbricated, patent, very thin, quite flat, elliptical; the lobulus helmet-shaped, with a single subreflexed horn or spine. Stipules wider than the stems. Perichætium on a short branch, (nearly covering the calyx), the three pieces of which it is composed are united at their bases, dentate, erect, the lesser lobe lanceolate. Angles of the calyx with variously curved spines, which are sometimes confluent so as to form a wing. This species approaches nearest to the North American *Frullania Atchafalagæ*, Hampe. The leaves are whiter and more imbricated, the spine of the lobulus is longer and more decurved, while the stipule is dentate.

(Phragmicoma, *Nees.*)

23. *J. rotalis*, n. sp.; caule implexo procumbente debili vage ramoso, foliis imbricatis patentibus concavis oblongo-rotundatis integerrimis lobo inferiori minuto involuto ovato, stipulis subimbricatis rotundatis integerrimis, calyce laterali obovato tumido basi inflato-costato ore minuto depresso.

HAB. St. Helena.

Creeping among *Musci* or *Hepaticæ*, pale olive. Stems 1 inch long, variously branched. Leaves wide, their tops broadly rotundate, quite entire. Stipules four or five times as wide as the stems. Perigonia lateral, linear-oblong, spicate. Perichætial leaves erect, the lesser lobe lanceolate, acute. Pedicel exserted, as long as the calyx. Capsule pale yellow, split half-way down. This has a strong affinity to *Jung. applanata*, Nees, from Java; our plant, however, is more minute, paler, has leaves less deflexed, while the stipules are nearly circular and not kidney-shaped as in the Javanese species.

24. *J. acutiloba*, n. sp.; caule laxe implexo prostrato ramoso, ramis brevibus patentibus, foliis arcte imbricatis patentibus oblongo-rotundatis concavis integerrimis lobo inferiori minute ovato subdentato involuto, stipulis majoribus imbricatis rotundatis subemarginatis, foliorum perichætialium lobo inferiori acuminato, calyce oblongo-cordato.

HAB. St Helena.

Patches closely adhering to bark, wide, blackish-green, the younger pale olive. Stem more than 1 inch long, irregularly branched. Leaves crowded, slightly deflexed; the perichætial dentate, erect, the stipules emarginate.

Allied to the European *Jung. Mackaii*, Hook. Its stems are thicker, the lower lobes more minute, the stipules far larger, while the lesser lobe of the lateral perichætial leaves is acuminate.

25. *J. microscypha* n. sp.; caule procumbente vage ramoso, ramis patentibus, foliis imbricatis patentibus rotundatis concavis integerrimis margine inferiori loboque minori oblongo involutis, stipulis majoribus oblato-rotundatis inte-

(Lejeunia, *Libert.*)

26. *J. pterota*, n. sp.; caule implexo prostrato vage ramoso, foliis approximatis patentibus ovato-oblongis apiculatis integerrimis lobo inferiori minuto oblongo involuto unidentato, stipulis rotundato-oblongis subimbricatis bifidis integerrimis, calyce demum laterali obovato alato tubifero.

HAB. St. Helena.

Patches one or two inches wide, dusky brown. Stems scarcely one inch long, weak, flexuose, with short, irregular branches. Leaves scarcely imbricated, obtuse yet with a minute apiculus. Stipules large, broadly elliptical, lying close on the stem. Calyces several on the same stem, obovate, with five considerable folds or wings. Perigonium a lateral, obtuse, oblong spike. The present is very like *Lejeunia sordida*, Nees, from Java, but may be recognised by the apiculate leaves which are less imbricated, and by the longer and narrower stipules.

27. *J. Ascensionis*, n. sp; caule arcte implexo prostrato ramoso, foliis imbricatis patenti-decurvis oblongis apice subrotundis apiculatis integerrimis lobo inferiori minuto oblongo involuto unidentato, stipulis rotundato-oblongis bifidis integerrimis.

HAB. Ascension Island.

Patches three or four inches wide, pale brown. Stems an inch long, irregularly branched. Leaves somewhat imbricated. Cellules of the leaves rather large. Stipules broad as long. This closely resembles our *J. pterota*, and may be distinguished by the greater size, paler colour, by branching principally towards the base of the stem, by the decurved leaves, which too are not so regularly apiculate, and, above all, by the larger cells of the leaves. Calyces have not been observed on this species, yet they are frequent on the other.

28. *J. marginalis*, n. sp.; caule exili prostrato vage ramoso, foliis laxis patentibus concavis ovato-acuminatis margine

inferiori reflexis integerrimis lobo inferiori ovali involuto, stipulis obcordatis minutis segmentis obtusis.

HAB. Cape Horn. On *Sphærophoron coralloides*, Ach.

Patches about one quarter of an inch wide, very pale. Branches erect. The tops of the leaves always acuminate, sometimes incurved. This differs from our *Lejeunia latitans*, (vol. 3, p. 399), by the greater size, by the less waved leaves being more patent, and by the obcordate stipules.

29. *J. plicatiloba*, n. sp.; caule implexo procumbente vage ramoso, foliis laxis erecto-patentibus concavissimis rotundato-quadratis subtruncatis integerrimis, lobo inferiori subæquali basi tumido incurvo apice angulato adpresso, stipulis exiguis emarginato-bipartitis segmentis linearibus subincurvis.

HAB. Lord Auckland's group. On *Parmelia intestiniformis*, Ach.

Patches minute, loose, pale. Stems scarcely one quarter of an inch long. Leaves distant, very much resembing in the position of their inferior lobes those of a *Radula*, Nees. Stipules very minute. The shoot looks like two rows of the minutest alternate beads, between and along which the fine stem is scarcely perceptible.

30. *J. primordialis*, n. sp.; caule exili implexo vage ramoso, ramis subpatentibus, foliis laxis erectiusculis anguste ob-

(Diplolæna, *Nees.*)

31. *J. procumbens*, n. sp.; fronde implexa simplici lineari tenui subacuta uninervia margine integerrima mascula acuminata atque in serie conferta lineari antherifera.

HAB. St. Helena.

Patches several inches wide, pale sap-green. Fronds about one inch long, simple, yet sometimes appearing branched by a young shoot arising from the nerve below the frond. Male flowers aggregated in a linear series extending at each side of the nerve near the top of the frond, consisting of minute imbricated scales, under which sometimes the teguments of the anthers may be detected. Sometimes the frond increases by a new narrow shoot from the broader summit of the older. The simple fronds and the linear series of clustered male flowers may serve to distinguish the present from its congeners.

(Pellia, *Raddi.*)

Aneura multifida L. H.

32. *J. incisa*, n. sp.; fronde cæspitosa carnosa atro-viridi plana enervia inciso-ramosa lobis pinnatis linearibus apice latiori bilobo integerrimo subdecurvo.

HAB. Lord Auckland's group.

No fructification present, but analogy suggests the genus. Tufts quite black when dry, when moistened the younger parts assume a dark olive-green colour. Fronds nearly two inches long, lobes scarcely one tenth of an inch wide, all nearly in the same plane; pinnules very short and obtuse; the substance carnose and tough. The bilobate termination of the fronds, with a dark point at the bottom of the sinus corresponding to the place of the receptacle of the fruit, induces us to prefer placing this species under *Pellia*, Raddi, than under *Aneura*, Nees.

(Symphyogyna, *Nees.*)

33. *J. rhodina*, n. sp.; fronde minuta oblonga dichotoma

tenerrima pellucida uninervia margine dentata calyptraque lineari longissima rosaceis, capsula lineari-oblonga.

HAB. Van Diemen's Land. (*Dr. Lyall.*)

Fronds two or three lines long, much shorter than the calyptræ. Involucral scales around the base of the calyptra four or five-toothed, setaceous above, erect. Capsule often emitting the seeds and spiral filaments from one lateral opening, but the pieces into which it dehisces are various in number and size, the top of the capsule remaining entire. There is no green colour in any part of the plant.

34. *J. convoluta*, n. sp.; fronde tenui elongato-oblonga uninervia subdichotoma margine undulato-involuta ex frondis disco prolifera, fructu in frondis discum sessili, calyptra subulata apice pistillifera, perigoniis lineatim supra frondis nervum congestis squamis minutis acuminatis laciniatis.

HAB. Ascension Island.

Patches some inches wide; fronds scarcely half an inch long, sparingly branched, their margins variously twisted, frequently involute. A new frond has been observed to rise with a narrow base from the disk of the old, from over the nerve and towards the apex. The frond, sometimes, sends out a linear process at the summit which radicates. The pedicellated oval anthers are free, (that is, not immersed)

Var. γ *nana* is far minuter, more branched, the mode of branching is intermediate between that of var. *natans* and of *J. multifida*, L.; the cellules are shorter and wider.

These two varieties may turn out to be distinct species when their fructification is known.

(Fegatella, *Cæsalpinus.*)

36. *J. limbata*, n. sp.; fronde implexa prostrata lineari-oblonga apice biloba margine elevata corrugata nigricante, receptaculis fœmineis subrotundis subbilocularibus disco rugoso loculis incrassatis verticaliter fissis, pedunculis epiphyllis.

Hab. Ascension Island.

Fronds collected into flat patches several inches wide, canaliculate, sometimes bilobate at their tops, often simple with a very shallow sinus; pale green when moistened; their surface beset with numerous pores in the form of whitish elevated points of the cuticle. Rootlets pale brown, along the axis, exterior to which on each side is a row of imbricated, dark blood-red scales, which are semi-ovate with a linear appendage or apiculus; exterior again to these, the cuticle of the under-side of the frond is much wrinkled and of the same colour as the scales. The fruit, both male and female, is truly epiphyllous, sometimes two or three receptacles occur along the axis on the same plant. The indusium, which in the young state envelopes the receptacle and in maturity lies expanded beneath it, consists of several lanceolate, scariose, dark red scales with pale or colourless summits. The female receptacle is sometimes sessile, sometimes pedunculated, it is roundish and has a wrinkled carnose disk above; the loculi are usually two, with thick valves that appear marginate at the vertical opening. The male receptacle has an indusium similar to that of the female. The disk of the male receptacle is nearly round, carnose, imbedded in the frond; it has above from eight to ten hemispherical elevations, beneath each of which is a conical cavity reaching down through the entire depth of the receptacle, in which the anthers are respectively placed. Capsule sessile. Seeds angulato-rotund. Elateres minute.

Our *Fegatella australis*, (vol. 3, p. 572), from New Zealand, has likewise an epiphyllous inflorescence; a circumstance which, in the absence of any other character, is scarcely sufficient to distinguish such species by placing them into a new genus. It is very much to be doubted if the genera *Plagiochosma* and *Antrocephalus* of Lehman's Pugilli, or even the *Rebouillia* of Raddi, are truly and naturally different from *Fegatella*. The present species may be known from our *F. australis*, by its more linear fronds, by the semiovate scales of the inferior surface and by the wider disk of the female receptacle.

Monoclea, *Hook.*

37. Monoclea *adglutinata*, n. sp.; fronde implexa lineari tenuissima dichotoma uninervia prostrata lobis integerrimis, calyce elongato lineari apice bilabiato, capsula apice apiculata integra.

HAB. St. Helena. On trees on Diana's Peak, at an elevation of 2000 feet.

Patches minute, scattered, dark green. Fronds scarcely one quarter of an inch long, narrow, repeatedly dichotomous, most minutely cellular, very thin, adhering closely to the

HAB. Lord Auckland's group.

Fronds scarcely half an inch long, about one tenth of an inch high. The concave frond, with entire connivent lobes, reminds one of *Collema granulatum*, Ach.; but, in the absence of buds and of any fructification, the structure of the frond seems to ally this species to *Riccia;* along the longitudinal axis the frond is thick, carnose and of a very spongy texture.

Contributions towards a FLORA *of* BRAZIL, *being the distinctive Characters of a Century of New Species of Plants from the* ORGAN MOUNTAINS, *by* GEORGE GARDNER, ESQ., F.L.S. *Superintendent of the Royal Botanic Gardens, Ceylon.*

Continued from p. 355 *of Vol. II.*

BIXACEÆ.

RALEIGHIA. Genus novum.*

CHAR. GEN. Flores hermaphroditi. Calyx quadripartitus, persistens, laciniis æstivatione valvatis, oblongo-lanceolatis, acutis, trinerviis, extus pubescentibus. Corolla nulla. Stamina plurima, fundo calycis pluriseriatim inserta: filamenta

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* This remarkable plant is unlike *Bixaceæ* (i. e., *Flacourtianeæ* or *Prockiaceæ* of Bennett Pl. Jav. Rar. p. 190), and so near in habit to *Belangera*, that I have carefully compared my specimens with the above description. It appears in all essential points to be accurate, except that Mr. Gardner had overlooked the interpetiolar foliaceous stipules, which had probably already fallen off in his specimen. The leaves are strictly opposite, and the petioles connected by a transverse prominent line, after the fall of the stipules; the racemes are usually terminated by a tuft of leaves, as in many *Cunoniaceæ;* the divisions of the calyx are slightly unequal and decidedly valvate in æstivation, and are united at the base in a short, broadly turbinate tube; there are no glands; the staminal disk adheres to the calyx up to the base of the divisions; the ovary is sessile, but perfectly free and unilocular, with the ovules arranged in a double row along linear, nerviform, parietal placentæ, of which I have generally observed three, but I have also met with two only. My seeds are not quite ripe; but, as in *Cunoniaceæ,* I find an outer integument, thick and somewhat coriaceous, and an inner membranaceous one. Thus the whole of the characters would place *Raleighia* among *Cunoniaceæ*, near *Belangera;* excepting

filiformia, libera, æqualia: antheræ introrsæ, subglobosæ, biloculares, loculis longitudinaliter dehiscentibus. Ovarium sessile, liberum, uniloculare. Ovula in placentis parietalibus tribus circiter viginti, anatropa. Stylus terminalis, cylindricus: stigma brevissime trilobum. Capsula stylo indurato superata, subglobosa, adpresso-pilosa, unilocularis, trivalvis, valvis medio placentam nerviformem gerentibus. Semina 3-6, subglobosa, angulata, epidermide membranacea, testa crustacea. Embryo in axi albuminis carnosi orthotropus; cotyledones breves, semiteretes; radicula tereti, brevissima, umbilico proxima.—*Frutex in Brasiliæ montibus crescens,* Weinmanniæ *facie; ramis dichotomis; foliis oppositis (estipulatis) petiolatis, oblongis, penninerviis, serratis; racemis terminalibus, elongatis, multifloris; floribus parvis.*

5723.* R. *Americana.*

HAB. Organ Mountains, at an elevation of nearly 7,000 feet above the level of the sea. *Fl.* March.

Frutex 3-4-pedalis, dichotomo-ramosus. Ramuli teretes, glabriusculi, vel apice pilosi, cicatricibus foliorum exasperati, vetuli cortice cinereo vestiti, novelli rubelli. Folia ad apices ramulorum approximata, petiolata, opposita, 2-2½-poll. longa, 8-10-lin. lata, oblonga vel oblongo-lanceolata, utrinque attenuata, penninervia, serrata, serraturis incurvis obtusis, supra viridia, glabra, nervo medio pilosiuscula, subtus pallidiora,

The shrub on which I have established this genus, and have named it in honour of Sir Walter Raleigh, the celebrated American voyager, has very much the habit of some species of *Weinmannia;* but in the structure of its flower and fruit it comes near to *Prockia* and *Banara.* It seems to be the only plant belonging to the Order which has opposite leaves.

POLYGALACEÆ.

5679. Polygala *revoluta*; caulibus suffruticosis ramosis pubescentibus, foliis glabris brevissime petiolatis lineari-oblongis mucronatis margine revolutis, racemis terminalibus laxis paucifloris, sepalis exterioribus 3 inæqualibus acutis, interioribus ovato-rotundatis sub-5-nerviis, carinæ lobo medio cristato, petalis lateralibus basi concretis, capsula compresso-rotundata utrinque emarginata glabra.

HAB. Dry places, on the summit of the Organ Mountains. *Fl.* March.

Caules subbipedales, purpurascentes, in sicco striati, erecti. Folia alterna, 8-10 lin. longa, 1-1½ lin. lata, subtus pallidiora. Caruncula semine piloso brevior.

LINACEÆ.

5682. Linum *palustre*; glabrum, caule suffruticoso ramoso, ramis oppositis angulatis, foliis oppositis v. ramulorum interdum alternis linearibus vel lineari-lanceolatis acutis, floribus terminalibus, sepalis ovatis acutisciliatis pellucido-punctatis, petalis flavis, stylis ad basin usque liberis, capsula globosa, valvulis dorso planis.

HAB. In moist grassy places, near the summit of the Organ Mountains. *Fl.* March.

Suffrutex pedalis, adscendens, ramosissimus. Rami teretes, angulati. Folia sessilia, 2 lin. circiter longa, vix lineam lata. Capsula subglobosa, 5-valvis. Semen complanatum, fulvum, tenuissime punctulatum.

Near L. *junceum*, St. Hil. from which it differs by having opposite leaves and branches.

5683. Linum *Organense*; glabrum, caule suffruticoso ramoso, foliis oppositis brevissime petiolatis exacte ellipticis, floribus axillaribus terminalibusque, petalis flavis, stylis ad basin usque liberis, stigmatibus capitatis, capsula ovata obtusa, valvulis dorso planis.

HAB.! Dry bushy places, near the summit of the Organ Mountains. *Fl.* March.

Suffrutex adscendens, ramosissimus, glaber. Rami teretes, striati. Folia 5-6 lin. longa, 3 lin. lata. Calycina foliola ovato-lanceolata, acuta, trinervia, glanduloso-ciliata. Petala 5 lin. longa, integerrima. Stamina 5, basi monadelpha, pistillo breviora. Capsula 5-valvis, valvulis bifidis. Semen complanatum, fulvum, tenuissime punctulatum.

TERNSTRÖMIACEÆ.

5681. Ternströmia *cuneifolia*; foliis petiolatis coriaceis cuneato-obovatis indistincte glanduloso-dentatis apice emarginatis margine revolutis uninerviis supra nitidis subtus punctato-scabriusculis, pedunculis axillaribus solitariis, foliolis calycinis valde inæqualibus rotundatis margine glanduloso-ciliatis, petalis rotundatis integris.

HAB. Open places on the Organ Mountains, at an elevation of about 6,000 feet above the level of the sea. *Fl.* March.

Frutex 2-3-pedalis, ramosus. Rami teretes, cortice cinereo

HAB. In virgin forests on the Organ Mountains, at an elevation of between 3,000 and 4,000 feet above the level of the sea. *Fl.* March.

Arbor 50-60-pedalis. Folia 4-4½ poll. longa, 12-16 lin. lata. Calyx tubo campanulato, dentibus 5 in limbum integrum submembranaceum concretis. Petala 5, rosea, late oblonga, pollicaria et ultra. Stamina 10, inæqualia. Antheræ inter se æquales, lineares, falcatæ, uniporosæ, connectivo in calcar elongatum producto, in staminibus longioribus bifido, in aliis bilobo-capitato. Ovarium liberum, globosum, apice glabrum, depressum. Stylus filiformis. Capsula 5-locularis.

5707. Clidemia *alpestris*; ramulis compressis, petiolis paniculis foliisque junioribus pube stellata decidua albido-lepidotis, foliis cujusque jugi plerumque inæqualibus longe petiolatis ovatis acuminatis basi cordatis 7-nerviis utrinque scabriusculis integerrimis margine petiolisque rufo-pilosis, paniculis terminalibus pilosis folio brevioribus, calyce campanulato piloso 5-dentato, dentibus brevibus obtusis.

HAB. Organ Mountains, at an elevation of about 6,000 feet. *Fl.* March.

Frutex 8-pedalis. Folia 4-5 poll. longa, 1½-2 poll. lata. Petioli 12-15 lin. longi. Petala oblongo-lanceolata, acuta, alba. Styli filiformes, 4 lin. longi.

MYRTACEÆ.

5716. Myrcia *buxifolia*; fruticosa, ramulis dense foliosis, pedunculis axillaribus 3-floris folia æquantibus, foliis ellipticis vel elliptico-ovatis obtusis margine revolutis glabris vel junioribus ramulis pedunculisque albo-tomentosis, floribus sessilibus, calyce dense piloso, lobis ovatis acutis.

HAB. Organ Mountains, at an elevation of about 6,000 feet. *Fl.* March.

Frutex 3-pedalis. Folia 6-8 lin. longa, 3-4 lin. lata, supra nitida, breve petiolata. Petala obovata, pellucido-punctata, extus pubescentia. Ovarium biloculare, loculis biovulatis.

5715. Calyptranthes *caudata;* frutescens, glaberrima, ramulis angulatis, foliis brevissime petiolatis lanceolatis longe obtuse acuminatis, pedunculis axillaribus solitariis unifloris folio duplo fere brevioribus, alabastro globoso apiculato.

HAB. By the sides of streams on the Organ Mountains, at an elevation of about 3,000 feet. *Fl.* March.

Frutex 4-5 pedalis, ramosissimus. Folia disticha, 15 lin. longa, 4 lin. lata, pellucido-punctata. Petala linearia, alba. Stamina numerosissima. Stylus filiformis.

5713. Eugenia *virgata;* fruticosa, pedunculis axillaribus terminalibusque solitariis racemosis 6-12-floris folio brevioribus rufo-pubescentibus, bracteis linearibus obtusis, bracteolis acutis, foliis oblongo-lanceolatis obtuse acuminatis basi subcuneatis glabris coriaceis.

HAB. Woods, by the sides of streams in the Organ Mountains, at an elevation of about 3,000 feet. *Fl.* March.

Frutex 3-5-pedalis. Folia 15 lin. longa, 5-6 lin. lata, breve petiolata, supra viridia, subtus pallida, opaca. Calyces pubescentes, expansi, 4-lobi, lobis ovato-oblongis, obtusis, 3-nerviis. Ovarium biloculare, loculis pluriovulatis.

Near E. *Candolleana*, DC.

5714. Eugenia *pumila;* fruticosa, glaberrima, pedunculis axillaribus solitariis 3-floris folio quadruplo brevioribus, floriunifloris apice bibracteatis, calycis lobis rotundatis demum reflexis petalisque glabris.

HAB. Organ Mountains, at an elevation of from 5,000 to 6,000 feet. *Fl.* March.

Frutex 4-pedalis, ramosus. Folia 15 lin. longa, 5-6 lin. lata. Pedunculi brevi. Pedicelli 4-6 lin. longi, apice bibracteati, bracteis rotundatis, concavis. Petala late ovata, obtusa, pellucido-punctata, alba. Ovarium 2-loculare, loculis pluriovulatis.

5712. Eugenia *Miersiana*; fruticosa, ramulis subcompressis, petiolis pedunculis foliisque subtus dense rufo-tomentosis, pedicellis axillaribus solitariis vel rariter binis folio quadruplo et ultra brevioribus, foliis lanceolatis vel lanceolato-ellipticis cuspidatis supra glabris, calyce dense piloso-tomentoso 4-lobato, lobis ovatis acutis reflexis, petalis late ovatis acutis epunctatis.

HAB. Woods in the Organ Mountains, at an elevation of about 3,000 feet. *Fl.* March.

Frutex 8-10-pedalis. Folia 2½ pollicares longa, 12-15 lin. lata. Petioli 3 lin. longi. Pedunculi 6-7 lin. longi, demum reflexi. Calyx basi bibracteolatus. Discus ut in *Psidio* latus. Ovarium 3-loculare, loculis pluriovulatis.

Near E. *tomentosa*, Camb.

PASSIFLORACEÆ.

427. Passiflora (Cieca) *Vellozii*; tota piloso-hispida, foliis basi cordatis 5-nerviis trilobatis eglandulosis, lobis ovatis acutis apiculatis lateralibus medio duplo brevioribus divaricatis, petiolis versus apicem biglandulosis, glandulis longe stipitatis pilosis, stipulis dimidiatis semiorbiculatis profunde lacerato-ciliatis, pedicellis solitariis petiolo subæquantibus, bracteis semiuncialibus grosse pinnatifidis, calycis segmentis 5 oblongis obtusis infra apicem setaceis trinerviis, petalis nullis, coronæ filamentis seriei exterioris filiformibus sepala subæquantibus, seriei interioris breviter connatis fimbriatis.

Passiflora *fœtida*, Vellozo, Fl. Flum. 9, t. 86. (non Cavan.)

HAB. Organ Mountains, at an elevation of about 3,000 feet. *Fl.* Feb.

Folia 2¼ poll. longa, 15-18 lin. lata. Cirrhi simplices. Ovarium dense piloso-tomentosum.

428. Passiflora (Decaloba) *Organensis* ; glabra, foliis latis basi rotundatis eglandulosis subpeltatis 3-nerviis divaricato-subtrilobis, lobis lateralibus ovatis obtusis, medio lato obtusissimo, petiolis eglandulosis, pedicellis geminis petiolo longioribus, calycis segmentis oblongis obtusis, petalis brevioribus, coronæ filamentis seriei exterioris complanato-petaloideis petalis brevioribus, seriei interioris connatis.

HAB. Organ Mountains, at an elevation of about 3,000 feet. *Fl.* Feb.

Folia 2½-3 poll. longa, 3-4½ poll. lata. Petioli pollicares. Cirrhi simplices. Ovarium glabrum.

CUNONIACEÆ.

722* et 5721. Weinmannia *Organensis* ; albo-tomentosa, foliis impari-pinnatis 4-7-jugis, foliolis oblongis vel acutiusculis serratis, alis petiolorum obovatis, ramulis compressis apice dilatatis, racemis folia superantibus.

HAB. Organ Mountains, at an elevation of from 5,000 to

Arbuscula 10-12-pedalis. Foliola majora 2-2½ poll. longa, 6-8 lin. lata, supra viridia, subtus pallida. Flores quadripartiti, octandri.

UMBELLIFERÆ.

5725. Hydrocotyle *alpestris*; villosiuscula, foliis orbiculatis cordatis 6-7-lobatis subduplicato-crenato-dentatis supra adpresse pilosiusculis subtus ad nervos pubescentibus, petiolis villosis pedunculo glabriusculo brevioribus, umbella 25-30-flora, floribus distincte pedicellatis, fructibus late ovatis truncatis basi subcordatis ecostatis.

HAB. On moist shady rocks, near the summit of the Organ Mountains. *Fl.* March.

Herba parva. Surculi radicantes, pilosiusculi. Folia subpollicem lata. Petioli 2 poll. longi. Pedunculi 3-pollicares. Pedicelli 3 lin. circiter longi. Styli valde divaricati.

ARALIACEÆ.

433. Hedera *triloba*; glaberrima, caule fruticoso erecto inermi, foliis longe petiolatis membranaceis, aliis indivisis uninerviis aliis trinerviis trilobatis majoribus lobis acuminatis margine obscure dentatis, pedunculis terminalibus umbellatis 10-12-floris, pedicellis flores subæquantibus.

HAB. In virgin forests, on the Organ Mountains, at an elevation of about 4000 feet. *Fl.* January.

Frutex 4-6-pedalis. Folia majora 9 poll. longa, 4½ poll. lata. Petioli 4 poll. fere longi. Pedunculi sesquipollicares. Petala oblongo-lanceolata, acuta, apice incurva, glabra. Styli in unicum concreti.

My no. 5726, also from the Organ Mountains, is Hedera *capitata*, Smith.

LORANTHACEÆ.

436. Viscum *nitidum*; ramis ramulisque compressis, foliis lineari-lanceolatis obtusis nitidis basi attenuatis tenuissime 5-nerviis, spicis axillaribus solitariis folio triplo brevioribus articulatis, vaginis bifidis, baccis ovatis basi rachi immersis.

Hab. On trees in forests in the Organ Mountains, at an elevation of about 4000 feet. *Fl.* February.

Folia 3 poll. longa, 3-4 lin. lata. Spicæ pollicem longæ. Near V. *affine*, Pohl.

437 et 5727. Viscum *ellipticum*; ramis teretibus junioribus compressis striatis, foliis ellipticis vel obovato-ellipticis breviter petiolatis obtusis 3-nerviis, spicis axillaribus solitariis folio triplo fere brevioribus, baccis ovatis rachi immersis.

Hab. On the branches of a species of *Gaylussacia*, in open rocky places on the Organ Mountains, at an elevation of about 5000 feet. *Fl.* March.

Planta parva, vix pedalis, ramosa. Folia 6-9 lin. longa, 4-5 lin. lata. Spicæ 2-3 lin. longæ.

RUBIACEÆ.

✓ 5737. Hindsia *ramosissima*; fruticosa, ramosissima, ramulis glabris, foliis breviter petiolatis lanceolatis obtuse acuminatis basi acutis margine subreflexis venis utrinque 6-8 vix prominentibus supra glaberrimis nitidis subtus ad nervos pilosis, axillis venarum barbatis, calycis laciniis parum inæqualibus, corollæ tubo 8 lin. longo, laciniis oblongo-lanceolatis obtusis.

Hab. Open rocky places on the Organ Mountains, at an

Caulis suffruticosus, prostratus, ultrapedalis. Folia 10-12 lin. longa, 3-4 circiter lata, supra viridia, subtus pallidiora, pennivenia, venis 5. Petioli subulati 3-lin. longi. Stipulæ interpetiolares, adpressæ, subulatæ, glabræ. Corymbi terminales, tripartiti, bracteati, villosiusculi. Flores alares sessiles, laterales breve pedicellati. Calyx pilosiusculus, laciniis 2, linearibus, erectis, obtusis, trinerviis, basi lateraliter subunidentatis, tubo corollæ brevioribus. Corolla glabra, cærulea, fauce barbata, limbo 4-partito, patenti-reflexo, laciniis oblongis, acutis, æqualibus, tubum subæquantibus. Filamenta antheræque glabra. Stylus tubo brevior. Stigma bifidum. Fructus didymus, compressus.

5735. Chomelia *hirsuta*; tota pilis rigidis hirsuta, foliis ovatis acuminatis breve petiolatis, pedunculis axillaribus 1-floris, calycis lobis linearibus acutis, drupa oblonga.

Hab. Woods in the Organ Mountains, at an elevation of about 3500 feet. *Fl.* March.

Frutex 6-pedalis, ramosus, spinosus. Rami teretes, juniores hirsuti. Folia membranacea, 2½-3 poll. longa, 1-1½ poll. lata, utrinque piloso-hirsuta. Pedunculi axillares, graciles, pilosi, 6-lin. longi, uniflori. Calyx 4-fidus, laciniis elongatis, linearibus, acutis, hirsutis. Corolla ignota. Fructus oblongus, hirsutus.

5762. Coussarea? *uniflora*; ramulis minute puberulis, foliis breve petiolatis ellipticis vel elliptico-obovatis obtusis basi acutiusculis margine revolutis supra glabris subtus in axillis nervorum barbatis, stipulis latis membranaceis acutis, floribus terminalibus solitariis sessilibus.

Hab. Organ Mountains in woods by the sides of streams *Fl.* March.

Frutex 3-pedalis, ramosus. Folia ad apices ramulorum approximata, pollicem longa, 5-6 lin. lata. Calyx tubo ovato piloso cum ovario connatus, limbo supero 4-lobato, lobis ovatis acutis. Corolla infundibuliformis, tubo tereti, fauce villosa extus puberula 3 lin. longa, limbi quadrifidi laciniis lanceolatis tubum subæquantibus, æstivatione valvatis. Stamina

4-medio corollæ tubo inserta, vix exserta. Filamenta brevia, Antheræ lineares, erectæ. Stylus filiformis. Stigma bifidum, lobis linearibus, inclusis. Ovarium biloculare, loculis uniovulatis. Ovula erecta.

5763. Faramea (Tetramerium) *rivularis;* ramulis compressis, ✓ foliis ovalis vel elliptico-oblongis abrupte acuminatis basi acutis membranaceis, stipulis in aristam subdorsalem desinentibus petiolo longioribus, corymbis terminalibus trichotomis, floribus alaribus pedicellatis, calycis limbo brevi 4-dentato.

Hab. In moist woods, on the Organ mountains, at an elevation of upwards of 3000 feet. *Fl.* March.

Folia 3-4½ poll. longa, 1½-2 poll. lata. Petioli 3 lin. circiter longi. Corollæ albæ, laciniis limbi tubo æquilongis.

This species agrees somewhat with the technical character of *F. odoratissima*, DC., but is certainly different from Jacquin's figure, which represents the central flowers of the ultimate trichotomy as sessile. On my plant the flowers are all borne upon pedicels of equal length. The leaves are besides more acuminated.

5764. Faramea (Tetramerium) *caudata;* ramulis subcom- ✓ pressis, foliis oblongo-lanceolatis utrinque attenuatis longe acuminatis membranaceis petiolatis, stipulis in aristam subdorsalem desinentibus petiolo brevioribus, corymbis quinque-lobo, lobis ovatis acutis, corollæ tubo cylindrico intus glabro lobis 5 oblongis obtusis reflexis, staminibus inclusis, stylo glabro exserto.

HAB. In woods on the Organ Mountains, at an elevation of about 3000 feet. *Fl.* April.

Frutex 4-pedalis. Folia utrinque pallida, 5-6 poll. longa, 2 circiter lata. Petioli 9 lin. longi. Corolla alba, vix 5 lin. longa.

454. Psychotria *nemorosa;* glaberrima, foliis anguste lanceolatis acuminatis utrinque attenuatis coriaceis, stipulis subconcretis utrinque bipartitis, laciniis subulatis persistentibus, cyma terminali breve pedunculata, ramis subcompressis verticillatis, bracteis subulatis, floribus pentameris, calyce breviter dentato, dentibus acutis, corollæ tubo cylindrico, lobis oblongis obtusis, staminibus inclusis, stigmate bilamellato.

HAB. In dense virgin forests on the Organ Mountains, at an elevation of about 4000 feet. *Fl.* April.

Frutex 2-3-pedalis. Folia 2½-3 poll. longa, 6-9 lin. lata, supra viridia, subtus pallida. Petioli vix 3 lin. longi.

Near *P. leiocarpa*, and *P. intermedia.*

448. Palicourea *longepedunculata;* glaberrima, ramis ramulisque teretibus, foliis petiolatis oblongo-lanceolatis acutis vel acuminatis basi acutiusculis, venis venulisque subtus prominentibus, stipulis utrinque binis late ovatis, panicula longe pedunculata, ramis angulato-compressis, corolla cylindrica glabriuscula, staminibus inclusis, baccis ovatis compressis.

HAB. In dense forests in the Organ Mountains at an elevation of about 4000 feet. *Fl.* January.

Frutex 8-10-pedalis. Folia 6-9 poll. longa, 2-2½ poll. lata. Petioli subpollicares. Pedunculi 9 poll. longi. Panicula densa, rubella. Calyx breviter 5-dentatus. Corolla cylindrica, 6-lin. longa, 5-fida, lobis oblongis obtusis extus puberulis, basi vix gibba. Stylus exsertus. Stigma bifidum, lobis semi-orbiculatis.

451. Suteria *Hookeriana;* glaberrima, foliis petiolatis ellip-

tico-lanceolatis acuminatis basi acutis, floribus terminalibus sessilibus ternis, calyce membranaceo 5-dentato, dentibus late ovatis obtusis, corolla calyce duplo longioribus hypocraterimorpha 5-fida, laciniis oblongis acutis incrassatis, genitalibus inclusis, fructibus ovatis.

HAB. In woods common at an elevation of about 3000 feet on the Organ Mountains. *Fl.* February.

Frutex 4-pedalis, ramosus. Folia supra viridia, subtus pallidiora, 3½-4 poll. longa, 15-18 lin. lata. Petioli 3-4 lin. longi, semiteretes. Stipulæ subconcretæ, utrinque bifidæ, laciniis subulatis, demum deciduis. Corolla flava, 9-lin. longa.

This species differs from *S. Brasiliensis*, Mart. and *S. terminalis*, Mart., in its smaller flowers, and more acuminated leaves.

452. Suteria *parviflora;* glaberrima, foliis petiolatis oblongo-lanceolatis acuminatis basi acutiusculis, floribus terminalibus sessilibus ternis, calyce 5-fido, laciniis lanceolatis acutis, corolla calyce duplo et ultra longiore 5-fida, laciniis lanceolatis acutis apice incrassatis reflexis, antheris exsertis, fructibus globosis.

HAB. In woods on the Organ Mountains at an elevation of about 4000 feet. *Fl.* February.

Frutex 5-6-pedalis, ramosus. Folia 2½-3 poll. longa, 10-12 lin. lata. Petioli 3 lin. circiter longi. Stipulæ subconcretæ, utrinque bifidæ, laciniis subulatis, demum deciduis. Corolla flava, tubo intus barbato.

442. Borreria *Organensis;* caulibus basi fruticosis prostratis, ramis adscendentibus teretiusculis glabris fistulosis, foliis anguste lanceolatis acutis vix petiolatis venis 4-5 obliquis supra nervo medio pubescentibus marginibus scabriusculis, dentibus stipularum 5-7 in setas abeuntibus vaginæ longitudine, capitulis terminalibus hemisphæricis foliis 4 involucratis, genitalibus exsertis, capsula oblonga pilosa dentibus calycinis 4 linearibus hirtis coronata.

HAB. Open grassy places on the Organ Mountains at an elevation of about 3000 feet. *Fl.* January.

Near *B. scabiosiodes.* Cham. et Schl., but besides other differences is distinguished by its pilose capsule, and the want of long hairs on the involucral leaves.

438. Rubia *affinis;* tota pilosa, caule acute tetragono, foliis quaternatis obovato-oblongis obtusis mucronatis margine revolutis uninerviis supra glabriusculis subtus longe pilosis, pedunculis axillaribus oppositis unifloris folio longioribus, bracteis lanceolatis acuminatis, bacca sessili dense pilosa.

HAB. In open places, in forests among bushes, at an elevation of about 4000 feet on the Organ Mountains.

Herba. Caules diffusi, ramosissimi. Folia 4 lin. longa, 1-1½ lin. lata. Corolla rotata, alba, 4-lobata, lobis acutis extus pilosis. Ovarium pilosum.

5765. Rubia *rupestris;* piloso-hirta, caule acute tetragono, foliis quaternatis uninerviis supra glabriusculis nitidis subtus pilosis, pedunculis axillaribus oppositis unifloris folio duplo fere brevioribus, bracteis ovato-oblongis acutis, bacca sessili glabra.

HAB. Procumbent on the rocky summit of the Organ Mountains. *Fl.* February.

Herba. Caules diffusi, ramosissimi. Folia breve petiolata, 2½-3 lin. longa, 1½ lin. lata. Corolla rotata, 4-lobata, lobis ovatis acutis trinerviis, glabra, alba. Ovarium pilosum.

5767. Rubia *glabra;* glabra nitida, caule tetragono, foliis quaternatis ellipticis membranaceis obtusis mucronatis subtus nervo medio pilosiusculis, pedunculis axillaribus solitariis unifloris folia subæquantibus, bracteis lanceolatis mucronatis, ovario glabro, bacca ovoidea glabra in involucro sessili.

HAB. Open bushy places near the summit of the Organ Mountains. In fruit in March.

Herba. Caules diffusi, ramossissimi. Folia 6 lin. longa, 3-4 lin. lata. Flores ignoti.

My number 5766, also from the summit of the Organ Mountains, is *Rubia noxia*, St. Hil.

VALERIANEÆ.

461. Valeriana *Candolleana*; glabra, herbacea, scandens, ramis teretibus, foliis ovatis cordatis acuminatis grosse dentatis, paniculis axillaribus dichotomis laxis, staminibus inclusis, fructo ovato glabro.

HAB. In bushy places near the summit of the Organ Mountains. *Fl.* April and May.

Herba perennis, scandens, glaberrima. Rami teretes, striati. Folia opposita, longe petiolata, ovata, cordata, acuminata, lanceolatis utrinque attenuatis glanduloso-serrato-dentatis margine subrevolutis glabris, panicula trichotomo-corymbosa compacta, foliis floralibus sessilibus pinnatifidis, staminibus inclusis, fructibus ovato-ellipticis plano-convexis late marginatis linea longitudinali elevata antice notatis glabris.

Hab. In bushy places near the summit of the Organ Mountains. *Fl.* March.

Suffrutex 3-pedalis, erectus, parce ramosus, glaber. Rami subquadrangulares, florentes elongati, parce foliosi. Folia ad apicem ramulorum approximata, longe petiolata, anguste lanceolata, utrinque attenuata, glanduloso-serrato-dentata, margine subrevoluta, glabra, 3 poll. longa, 4½ lin. lata. Petioli vix pollicares, supra complanati, marginati, subtus carinata, margine versus basin interdum pilosi. Folia floralia sessilia, inciso-pinnatifida. Paniculæ terminales, corymbosæ: ramis trichotomis, pilosiusculis, confertis. Bracteæ oppositæ, oblongæ, acutæ, glabræ. Flores sessiles. Corolla parva, alba, campanulata, basi vix gibba, 5-fida, glabra. Stamina 3, inclusa. Stigma trifidum. Semina plano-convexa, late marginata, linea elevata antice notata, glabra, pappo coroniformi incurvo coronata.

COMPOSITÆ.

478. Vernonia (Lepidaploa) *Hilairiana;* caule suffruticoso, ramis angulatis pubescentibus, foliis petiolatis longe et anguste lanceolatis utrinque acutis margine revolutis minute denticulato-serratis supra rugosis scabris subtus tomentosis, panicula ramosissima pubescenti-tomentosa, capitulis pedicellatis 20-floris, involucri squamis oblongis pungentibus puberulis, achenio striato glanduloso, pappi ser. ext. brevi setosa.

Hab. Open bushy places on the Organ Mountains, at an elevation of about 3000 feet. *Fl.* April.

Suffrutex 8-10-pedalis. Folia alterna, 6-7 poll. longa, 10-12 lin. lata. Corolla glabra, violacea.

477 (bis). Vernonia (Lepidaploa) *paludosa;* caule suffruticoso,

tereti striato ramoso pubescente, foliis petiolatis lanceolatis utrinque attenuatis minute denticulatis supra scabridis subtus pubescenti-tomentosis, paniculis terminalibus aphyllis pubescentibus, capitulis 10-12-floris, involucri squamis puberulis obtusis, achenio striato piloso, pappi ser. ext. brevi setosa.

Hab. Open marshy places on the Organ Mountains, at an elevation of about 3000 feet. *Fl.* May.

Suffrutex 4-6-pedalis. Folia alterna, 4 poll. longa, 15 lin. lata. Corolla glabra, violacea.

My number 477 from the same locality, is Vernonia *denticulata,* DC. In the general distribution, these two species were mixed up with each other.

476. Vernonia (Lepidaploa) *densiflora ;* arborea, ramulis subalato-angulatis tomentosis, foliis petiolatis lanceolatis acuminatis integerrimis basi acutis supra scabriusculis subtus dense fulvo-tomentosis, panicula ramosissima pubescenti-tomentosa ramis scorpioideis aphyllis, capitulis sessilibus sub-12-floris, involucri squamis tomentosis obtusis, achenio piloso, pappi ser. ext. paleacea brevi.

Hab. In woods in the Organ Mountains, at an elevation of about 3000 feet. *Fl.* May.

Arbor 10-15-pedalis. Folia alterna, 5-7 poll. longa, 1-1½ lata. Corolla glabra.

5769. Vernonia (Lepidaploa) *Miersiana*; caule herbaceo erecto adpresse villoso simplici tereti striato apice in ramos angulatos diviso, foliis petiolatis lineari-lanceolatis elongatis acutis integerrimis supra piloso-scabridis subtus villoso-tomentosis, capitulis 2-5-floris sessilibus subgeminis folio florali multo brevioribus, involucri squamis imbricatis exterioribus pungentibus interioribus longioribus acutis, achenio villoso, pappi ser. ext. brevi setosa.

Hab. Moist open places in woods on the Organ Mountains, at an elevation of about 3500 feet. *Fl.* March.

Herba 4-5 pedalis. Folia alterna, 5-6 poll. longa, 8-10 lin. lata. Corolla glabra. Pappus albus.

517 et 5770. Vernonia (Lepidaploa) *decumbens*; caule basi fruticoso, ramis decumbentibus teretibus striatis villoso-tomentosis vel glabriusculis, foliis sessilibus longe linearibus acutis basi obtusis margine integerrimis revolutis supra scabriusculis subpilosis subtus villosis, cymis axillaribus terminalibusque bifidis scorpioideis, capitulis sessilibus 20-floris confertis, involucri campanulati squamis villosis, exterioribus in acumen setiforme patulum productis, intimis rectis acutis, achenio piloso, pappi seriei externa brevi paleacea.

Hab. Open rocky places on the Organ Mountains, at an elevation of about 5000 feet. *Fl.* March.

Suffrutex decumbens, ramosus. Folia alterna, 2½-3½ poll. longa, 3-4 lin. lata. Corolla glabra, violacea, laciniis tubo longioribus. Pappus albus.

512. Stevia (Paleaceo-aristatæ) *Organensis*; caule herbaceo erecto apice ramoso glanduloso-piloso-pubescente, foliis oppositis sessilibus rhomboideo-ovatis obtusiusculis basi subcordato-inæqualibus amplexicaulibus infra medium triplinerviis dentato-serratis utrinque villoso-hirsutis, corymbis axillaribus terminalibusque fastigiatis in paniculam dispositis, pappa paleaceo et 4-6-aristato.

Hab. Moist rocky open places on the Organ Mountains, at an elevation of about 5000 feet. *Fl.* May.

Herba bipedalis. Folia 3½-4 poll. longa, 1½ poll. circiter lata. Involucra et pedicelli glandulosa, squamis 5 lineari-oblongis obtusis. Flores rosei. Aristæ achenio ad angulos piloso æquales, corolla breviores.

519 et 5775. Eupatorium (Imbricata) *roseum;* fruticosum, erectum, ramosum, ramis teretibus striatis pubescentibus, foliis breve petiolatis oblongis vel elliptico-oblongis utrinque obtusis basi subattenuatis superne glabris subtus pubescentibus crenato-serratis uninerviis, corymbo terminali composito densissime conferto, capitulis oblongis 5-floris, involucri squamis imbricatis 3-seriatis oblongis obtusis glabris ciliatis, achenio glabro.

HAB. Open bushy places on the Organ Mountains, at an elevation of about 5500 feet. *Fl.* March.

Frutex 2-3-pedalis. Folia 15-18 lin. longa, 6 lin. lata. Flores rosei.

5776. Eupatorium (Imbricata) *alpestre;* fruticosum, ramulis teretibuss triatis fusco-pubescenti-tomentosis, foliis oppositis breve petiolatis lanceolatis acutis vel subacuminatis basi acutis grosse serratis penniveniis supra glaberrimis subtus ad nervos pilosiusculis cæterum resinoso-punctatis, corymbo composito terminali, capitulis brevissime pedicellatis confertis 5-floris, involucri squamis pubescentibus imbricatis, exterioribus lanceolatis acutis, interioribus ob-

Near Eupatorium *comptoniæfolium*, DC.

518 et 5774. Eupatorium (Imbricata) *tectum;* fruticosum, ramis teretibus striatis pubescenti-hirtis fastigiatis, foliis oppositis petiolatis lanceolatis vel ovato-lanceolatis obtusiusculis integerrimis triplinerviis supra glabris subtus tomentosis, corymbis terminalibus compositis fastigiatis, capitulis pedicellatis 20-floris, involucri squamis arcte imbricatis obtusis striatis glabris, achenio angula toad angulos pilosiusculo.

HAB. Bushy places on the Organ Mountains, at an elevation of about 5000 feet. *Fl.* March.

Frutex bipedalis, ramosus; rami dense foliosis. Folia 12-15 lin. longa, 4 lin. circiter lata. Flores pallide violacei.

Near E. *hypericifolium*, H. B. et K.

862. Eupatorium (Subimbricata) *dispalatum;* fruticosum scandens, ramis teretibus striatis glabris, foliis petiolatis oblongis acuminatis basi obtusis utrinque glabris margine revolutis subdentatis penniveniis reticulatis, corymbis axillaribus et terminalibus rufo-pubescenti-hirtis in paniculam dispositis, capitulis pedicellatis 5-floris, involucri squamis imbricatis striatis ciliatis exterioribus late ovatis interioribus oblongis, achenio piloso.

HAB. In woods on the Organ Mountains, at an elevation of about 3500 feet. *Fl.* July.

Frutex scandens. Folia opposita, 3½-4 poll. longa, 16 lin. circiter lata. Flores albi.

5786. Eupatorium (Eximbricata) *baccharifolium;* fruticosum, ramis ramulisque teretibus pubescentibus, foliis breve petiolatis ovato-ellipticis utrinque obtusis versus medium pauci-dentato-serratis glabris subtus punctatis trinerviis, corymbo terminali oligocephalo laxo, capitulis pedicellatis circiter 11-floris, involucri squamis 2-seriatis subæqualibus ovatis obtusis pubescentibus, achenio glanduloso.

HAB. Near the summit of the Organ Mountains. *Fl.* March.

Frutex bipedalis. Folia 6-9 lin. longa, 3-4½ lin. lata.

5777. Eupatorium (Eximbricata) *Organense;* suffruticosum, caule erecto sulcato glabro ad apicem corymboso-ramoso, ramulis pubescenti-tomentosis, foliis oppositis petiolatis ovatis acutis vel subacuminatis basi obtusis trinerviis serratis utrinque glabris, corymbis axillaribus terminalibusque fastigiatis pubescenti-tomentosis, capitulis pedicellatis circiter 25-floris, involucri campanulati squamis biseriatis lanceolatis acuminatis ciliatis dorso puberulis, achenio angulato resinoso-punctato.

Hab. Open rocky places on the Organ Mountains, at an elevation of about 5000 feet. *Fl.* March.

482. Mikania (Stipulatæ) *punctata;* suffruticosa scandens, ramis angulatis puberulis, petiolis ala foliacea repando-undulata marginatis basi in auriculam semireniformem dilatatis, foliis ovatis acuminatis basi et apice integris cæterum dentatis penniveniis supra glabris subtus puberulis pellucido-punctatis, paniculis axillaribus terminalibusque puberulis, ramulis oppositis angulatis, capitulis sparsis subsessilibus, bracteola minima ovata, involucri squamis oblongo-linearibus obtusis extus puberulis, achenio glabro.

Hab. Woods, Organ Mountains, at an elevation of about 3500 feet. *Fl.* February.

Folia 4-6 poll. longa, 2 circiter lata.

Near M. *pteropoda*, DC. from which it differs chiefly by

861. Mikania (Ecordatæ) *conferta*; fruticosa scandens, ramis teretibus striatis fulvo-lanuginosis, foliis petiolatis ovatis acutis basi subcordatis supra scabrido-strigoso-pilosis subtus fulvo-lanuginosis integerrimis aut vix subdentatis, pedunculis axillaribus terminalibusque in paniculam magnam dispositis, capitulis confertis ad apices ramulorum ternis breve pedicellatis, bracteis involucrum subæquantibus late ovatis obtusis extus tomentosis, involucri squamis obovato-oblongis obtusis striatis extus pilosis, achenio angulato glabro.

Hab. Woods, Organ Mountains, at an elevation of about 4000 feet. *Fl.* July.

Folia 4-4½ poll. longa, 2 circiter lata. Capitula 3-3½ lin. longa.

485. Mikania (Ecordatæ) *strigosa*; fruticosa, scandens, ramis teretibus striatis tomentosis, foliis petiolatis ovato-lanceolatis acutis basi rotundatis integerrimis supra scabrido-strigoso-pilosis subtus fulvo-lanuginosis, paniculis axillaribus terminalibusque, capitulis confertis ad apices ramulorum subternis breve pedicellatis, bracteolis ovatis striatis obtusis pilosiusculis, involucri squamis linearibus extus ad apicem pilosis, achenio piloso.

Hab. Woods, Organ Mountains, at an elevation of about 3500 feet. *Fl.* April.

5780. Mikania (Cordiformes) *fimbriata*; volubilis, tota cano-pubescens, ramis angulatis, foliis longe petiolatis cordatis subacuminatis minute dentatis supra scabriusculo-pilosis subtus pubescentibus, stipulis interpetiolaribus fimbriatis, pedunculis apice corymbiferis, capitulis pedicellatis, involucri squamis lineari-lanceolatis acutis puberulis, achenio glabro.

Hab. Open bushy places on the Organ Mountains, at an elevation of about 4000 feet. *Fl.* March.

Petioli 2 poll. longi. Limbus 3½ poll. longus, 2¼ poll. latus.

483. Mikania (Cordiformes) *umbellifera*; volubilis, glabriuscula, caule tereti striato, ramis subangulatis, foliis petiolatis

cordatis obtusis crenato-dentatis junioribus serrato-dentatis acutis pedunculis apice umbellatis, umbellis compositis, capitulis pedicellatis, involucri squamis lineari-lanceolatis acutis glabris, achenio glabro.

Hab. Bushy places, Organ Mountains, common at an elevation of about 4000 feet. *Fl.* March.

Petioli 1½ poll. longi. Limbus 2 poll. longus, 2 poll. latus. Flores albi. Pappus rufescens.

Near M. *opifera*, Mart.

5779. Mikania (Cordiformes) *affinis;* fruticosa, scandens, ramis teretibus albo-lanuginosis, foliis petiolatis cordatis acutis sub-5-nerviis minute dentatis supra dense pilosis subtus albo-lanuginosis, pedunculis axillaribus terminalibusque in paniculam coarctatam elongatam dispositis albo-lanuginosis, capitulis secus ramulos breviter racemosis pedicellatis, bracteola late ovata apice lacerato-ciliata, involucri squamis-oblongis obtusis extus pilosiusculis, achenio angulato glabro.

Hab. Woods on the Organ Mountains, at an elevation of about 5000 feet.

Petioli 1½ poll. longi. Limbus 4 poll. longus, 3½ poll. latus. Capitula 3 lin. circiter longa.

Near Mikania *lanuginosa*, DC.

496. Baccharis (Trinervatæ) *depauperata;* suffruticosa, erecta,

erecta, glabra, viscosa, ramulis teretibus striatis, foliis ellipticis obtusis basi attenuatis quintuplinerviis utrinque glabris serratis, corymbis terminalibus laxis, involucri campanulati glabri squamis oblongis obtusis, acheniisan gulatis pilosis.

HAB. Summit of the Organ Mountains. *Fl.* March.

Frutex bipedalis. Folia bipollicaria 10-12 lin. lata. Flores fœminei tubulosi, apice truncato-pilosi, stylo longe exserto, masculi ignoti.

497. Baccharis (Trinervatæ) *laxa ;* fruticosa, subscandens, glabra, ramosa, ramis ramulisque teretibus striatis, foliis oppositis petiolatis oblongo-lanceolatis acutis basi obtusis trinerviis integerrimis superne glabris nitidis subtus lepidoto-pubescentibus, corymbis axillaribus terminalibusque in paniculas magnas dispositis, involucri campanulati squamis exterioribus ovatis obtusis interioribus oblongis obtusis, acheniis striatis pilosiusculis.

HAB. Woods, Organ Mountains, at an elevation of about 3000 feet. *Fl.* April.

Frutex subscandens. Folia subtripollicaria, 8 lin. lata. Flores fœminei tubulosi, basi dilatati, apice truncati, stylo exserto, masculi ignoti.

5782. Baccharis (Cuneifoliæ) *vaccinioides;* fruticosa, erecta, ramosa, glabra, subviscosa, ramulis teretibus striatis, foliis oblongis obtusis basi cuneatis triplinerviis a medio ad apicem dentato-serratis utrinque glabris, capitulis in axillis superioribus solitariis breviter pedicellatis, involucro, masculo ovato, fœmino oblongo, squamis exterioribus ovatis obtusis interioribus oblongo-linearibus acutiusculis, achæniis angulatis glabris.

HAB. Organ Mountains, at an elevation of from 5000 to 6000 feet. *Fl.* March.

Frutex 4-6-pedalis. Folia 10 lin. longa, 4 circiter lata. Flores fœminei tubulosi, basi dilatati, apice breviter 5-fidi, stylo exserto; masculi tubulosi, 5-fidi, laciniis revolutis, antheris exsertis.

5783. Baccharis (Cuneifoliæ) *ciliata ;* fruticulosa ramosa subprostrata, ramulis teretibus sulcatis glabriusculis, foliis ellipticis obtusis basi cuneatis integerrimis vel versus apicem subserrato-dentatis subcoriaceis penniveniis superne nitidis utrinque resinoso-punctatis margine tomentoso-ciliatis, corymbis fœmineis terminalibus laxis, involucri campanulati glabri squamis linearibus acutis apice ciliolatis, acheniis angulatis glabris.

HAB. Bare rocky places, on the very summit of the Organ Mountains. *Fl.* March.

Frutex subprostratus, vix pedalis. Folia sessilia, 1-1½ poll. longa, 6-8 lin. lata, ad apicem ramulorum approximata. Flores fœminei basi tubulosi, apice dilatati 5-fidi, laciniis revolutis, stylo exserto ; masculi ignoti.

5785. Baccharis (Cuneifoliæ) *alpestris ;* fruticosa, ramosa, erecta, viscosa, glabra, ramulis teretibus striatis, foliis vix petiolatis obovatis obtusis basi cuneatis penniveniis serratis utrinque glabris margine junioribus præsertim tomentoso-ciliatis, corymbis terminalibus congestis, involucri late campanulati multiflori squamis lineari-lanceolatis acutis, acheniis angulatis glabris.

HAB. Summit of the Organ Mountains. *Fl.* March.

Frutex pedalis et ultra. Folia 1½-2 poll. longa, 12-15

Frutex 4-6 pedalis. Folia 15-18 lin. longa, 2-2½ lin. lata. Flores fœminei flavi, truncati, basi dilatati, stylo longe exserto; masculi ignoti.

507. Erigeron (Euerigeron) *palustre;* caule herbaceo erecto ramoso sulcato-striato puberulo-scabrido, foliis radicalibus longe petiolatis oblongo-lanceolatis acuminatis grosse mucronato-dentatis utrinque setulis sparsis aspero-scabris, caulinis similibus sed minoribus sessilibus et semiamplexicaulibus, summis lineari-lanceolatis integerrimis, capitulis ad apices ramorum solitariis corymbosis, involucri squamis lineari-lanceolatis acuminatis striatis subglanduloso-pubescentibus margine fimbriato-ciliolatis, ligulis disco duplo et ultra longioribus.

Hab. In marshes, common on the Organ Mountains, at an elevation of about 3000 feet. *Fl.* March and April.

Herba 4-6-pedalis. Folia radicalia sesquipedalia 2½ poll lata. Ligulæ angustæ lineares, apice 2-3-dentatæ, albæ. Corollæ disci flavæ. Antheræ ecaudatæ.

This species comes nearest to E. *sulcatum,* DC., from the Province of San Paulo; but is distinguished by its oblong-lanceolate, not oval, cauline leaves, pubescent, not glabrous, involucral scales, and shorter ligulæ.

5787. Erigeron (Euerigeron) *alpestre;* caule herbaceo erecto ramoso sulcato-striato hirto, foliis radicalibus longe petiolatis oblongo-lanceolatis acuminatis mucronato-dentatis supra pilosiusculis subtus glabriusculis, caulinis sessilibus amplexicaulibus ovato-lanceolatis acuminatis grosse mucronato-serrato-dentatis utrinque piloso-pubescentibus, summis lineari-lanceolatis integerrimis, capitulis ad apices ramorum solitariis corymbosis, involucri squamis lineari-lanceolatis acuminatis striatis glanduloso-pubescentibus et sparse villosis margine ciliolatis, ligulis disco duplo longioribus.

Hab. Moist bushy places on the Organ Mountains at an elevation of about 6000 feet.

Herba 2-3 pedalis. Folia radicalia 1½-pedalia, 2 poll.

circiter lata. Ligulæ lineari-subspathulatæ obtusæ integræ vel emarginatæ, albæ. Corollæ disci flavæ. Antheræ ecaudatæ.

This species is distinguished from both E. *sulcatum* and E. *palustre*, by its hairy stem, very different cauline leaves, villous involucral scales, and its broader and shorter ligules.

377. Conyza (Dimorphanthes) *rivularis*;* rhizomate suffruticoso, caule erecto subsulcato scabriusculo simplici, foliis sessilibus lanceolatis acuminatis distanter mucronato-serratis utrinque glabris uninerviis subtus punctatis, summis amplexicaulibus, paniculis corymbosis polycephalis, capitulis pedicellatis, involucri squamis lineari-lanceolatis acutis serrulatis.

Hab. On rocks in the bed of the Rio Paquequer in the Organ Mountains. *Fl.* March.

Suffrutex 1½-2-pedalis. Folia 3½-4 poll. longa, 6-9 lin. lata. Flores masculi 8-10.

Near C. *arguta*, Less., but has much broader leaves, and a greater number of male flowers.

Chevreulia =

LEUCOPODUM. Genus novum.

CHAR. GEN. *Capitulum* multiflorum heterogamum, floribus radii multiserialibus fœmineis sæpe abortientibus, corolla *sis, parvula, lanuginosa, Brasiliensis.* Radix *cæspitosa, fibrosa.* Caules *plures, decumbentes, subtripollicares, ramosi, foliosi.* Folia *opposita, sessilia, lineari-lanceolata, mucronata,* 4 *lin. longa, integerrima, uninervia, reticulato-venosa.* Pedunculi *terminales, solitarii, elongati, dense lanuginosi,* 1-*cephali.* Capitula *oblongo-cylindrica.* Flores *flavi.* Pappus *rufescens.*

5787.* Leucopodum *campestre.* = Chevreulia acuminata Less.

HAB. Open grassy places, Organ Mountains, at an elevation of about 3500 feet. *Fl.* March.

The little plant on which I have established this genus is related to *Conyza* and its allies, but differs from them all in its caudate anthers, terete and rostrate achænia, and opposite leaves.

499. Pluchea (Stylimnus) *Organensis;* herbacea, tota rufo-tomentosa, caule sulcato, foliis amplexicaulibus cordatis oblongis acutis serratis venoso-reticulatis, corymbo composito conferto, involucri squamis ovato-lanceolatis acutis dorso dense villoso-tomentosis disco brevioribus.

HAB. Open marshy places, Organ Mountains, at an elevation of about 3000 feet. *Fl.* April.

Herba 2-3-pedalis, apice corymboso ramosa, foliosa. Folia 2½-3 poll. longa, 3-4 lin. lata. Capitula multiflora. Flores flavi, fœminei pluriseriales, 3-dentati, stylo exserto, masculi plures. Antheræ exsertæ, caudatæ. Achenium sulcato-angulatum.

Near P. *oblongifolia,* and P. *bifrons* of DC. but abundantly distinct from both.

506. Wedelia (Cyathophora) *scandens;* caule fruticoso scandente, ramis albo-piloso-tomentosis teretibus, foliis petiolatis oblongo-lanceolatis acuminatis basi rotundatis remote serrulatis triplinerviis supra piloso-scabridis subtus velutino-villosis, pedicellis solitariis elongatis, involucri

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* There is some mistake in this No., as 5787 is properly described above as a new *Erigéron.* The present plant may perhaps be 5788, of which I have no specimen.—G. B.

squamis ovato-lanceolatis, achenio calyculo minimo piloso.

HAB. Organ Mountains, in bushy places by the sides of streams. *Fl.* February.

Folia 2-4½ poll. longa, 6-10 lin. lata. Petioli 2-3 lin. longi. Achenia apice pilosa.

Near W. *subvelutina,* DC., but differs in being fruticose and scandent, and in having much longer pedicels. My n. 5523, from the Serra d'Estrella, is the same species, a little more villoses.

511. Bidens (Psilocarpæa), *speciosa;* caule fruticoso scandente tereti, ramulis teretibus striatis glabris vel pubescenti-tomentosis, foliis petiolatis pinnati-vel tri-sectis ovato-lanceolatis acuminatis minute et acute serratis supra glabriusculis subtus plus minusve pubescentibus, segmentis lateralibus sessilibus basi valde inæqualibus medio maximo petiolato basi acuto, capitulis pedicellatis paniculatis radiatis, involucri squamis subæqualibus acutis, exterioribus reflexo-squarrosis ciliatis, acheniis compressis ad angulos laterales dense piloso-ciliatis biaristatis.

HAB. Woods, Organ mountains, at an elevation of about 3000 feet. *Fl.* March and April.

Near B. *tereticaulis,* DC. but well marked by its decidedly striated stem, and laterally ciliated achenia. From

Hab. Summit of the Organ Mountains. *Fl.* March.

Suffrutex bipedalis. Folia alterna, 20-22 lin. longa, 6-8 lin. lata. Pedicelli 6-lin. circiter longi, uniflori. Involucri squamæ oblongis, acutæ, margine membranaceæ, Flosculi lutei.

514 et 5792. Senecio *Organensis*; glabriusculus aut subarachnoideo-tomentosus, caule erecto simplici valde sulcato, foliis petiolatis oblongis vel elliptico-oblongis utrinque acutiusculis grosse subduplicato-dentato-serratis, corymbo composito tomentoso, involucro turbinato cylindrico 10-12-phyllo, squamis accessoriis 5-6 linearibus ciliatis, flosculis 20-25, ligulis 5, acheniis glabris, pappo corollam disci subæquante.

Hab. Moist bushy places near the summit of the Organ Mountains. *Fl.* March and April.

Herba perennis. Caules plures ex eadem radice, 2-5-pedales, erectæ foliosæ. Folia alterna, 5-7 poll. longa, 2-2½ lata, supra viridia, subtus pallida. Involucri squamæ disco breviores, apice pubescentes, aut lineares acutæ aut oblongæ obtusæ, margine submembranaceæ. Flosculi lutei.

252. Senecio *valerianæfolius*; herbaceus, glaberrimus, ramis erectis striatis, foliis petiolatis profunde pinnatifidis, laciniis sub-5-jugis lineari-lanceolatis acutis serrato-dentatis, panicula ramosissima laxa subcorymbosa, involucro calyculato circiter 12-phyllo, floribus circiter 40 tubulosis, acheniis glabris.

Hab. Open bushy places, Organ Mountains, at an elevation of about 3000 feet.

Herba annua, bipedalis, ramosa. Folia 4-5 poll. longa, laciniis 1-1½ poll. longis, 3-lin. circiter latis. Flores lutei.

863. Flotovia (Erinesia) *quinquenervis*; foliis breve petiolatis inermibus oblongis acutis vel subacuminatis basi acutis quinquinerviis supra glabris nitidis subtus adpresse villosis, capitulis thyrsoideis 23-floris, involucri squamis inermibus, exterioribus ovatis dorso pubescentibus margine tomen-

toso-ciliatis, interioribus linearibus reflexis apice extus tomentosis, corollis basi extus glabris.

HAB. Woods, Organ Mountains, at an elevation of about 3500 feet. *Fl.* July.

Frutex diffusus, spinosus. Spinæ geminæ, 12-15 lin. longæ. Folia 3½-4½ poll. longa, 18-21 lin. lata. Pedunculi 1-4-cephali pubescenti-tomentosi, 6-9 lin. longi, basi bracteati, bracteis lineari-lanceolatis, pungentibus.

5794. Flotovia (Erinesia) *leptacantha*; foliis breve petiolatis apice spinosis elliptico-oblongis utrinque obtusis supra glabris nitidis subtus ramulisque villosis, involucri squamis inermibus, exterioribus ovatis margine tomentoso-ciliatis, interioribus linearibus reflexis apice extus villosis, corollis basi extus glabris.

HAB. In ravines, near the summit of the Organ Mountains. *Fl.* March.

Frutex ramosissimus, spinosus 8 12-pedalis. Folia trinervia, 10-12 lin. longa, 4-4½ lin. lata. Capitula subsessilia, 20-flora.

My n. 516, also from the Organ Mountains, but at a lower elevation, is a variety of this plant, with leaves nearly double the size, and less villous beneath.

5793. Achyrophorus (Oreophila) *Brasiliensis*; caule glabro striato ramoso foliis duplo breviore, foliis radicalibus longe

stricto simplicissimo, foliis sessilibus superne confertis longe lanceolatis acutis basi subattenuatis minute denticulatis, racemo pyramidali terminali densifloro, bracteis foliaceis deflexis lanceolatis acuminatis pedicello deflexo-curvato longioribus, tubo calycis hemisphærico, lobis linearibus acuminatis basi latis tubo corollæ dimidio et ultra brevioribus, lobis corollæ omnibus angustis acuminatis, labio inferiore trifido, antheris laciniis brevioribus, 2 inferioribus apice barbatis.

HAB. Moist open rocky places, Organ Mountains, at an elevation of about 5000 feet. *Fl.* March.

Herba 6-8-pedalis. Folia 15 poll. longa, 1½ lata. Corolla cyanea. Semina alata.

GESNERIACEÆ.

470 et 5799. Gesneria *salviæfolia*; caule fruticoso erecto ramoso teretiusculo glabro, ramis junioribus fulvo-tomentosis, foliis oppositis petiolatis oblongis utrinque acutis serratis supra strigoso-pilosis subtus tomentosis, pedicellis axillaribus geminis unifloris calycibusque tomentosis folio brevioribus, calycis lobis lanceolatis acuminatis, corolla tubulosa subventricosa extus minute pubescenti-tomentosa, lobis patulis rotundatis subæqualibus.

HAB. Open rocky places, Organ Mountains, at an elevation of about 5000 feet. *Fl.* April.

Frutex 6-10-pedalis. Folia ad apicem ramulorum approximata, 2½-3 poll. longa, 10-12 lin. lata. Corollæ coccineæ, 15 lin. longæ. Stylus glaber staminaque inclusa.

471 et 5800. Gesneria *leptopus*; caule fruticoso erecto ramoso teretiusculo glabro, foliis oppositis petiolatis obovatis aut ellipticis acuminatis basi acutis serratis utrinque pilosiusculis subtus pallidis, pedicellis axillaribus solitariis unifloris folio brevioribus, calycis lobis lanceolatis acuminatis pilosiusculis, corollæ cylindricæ extus pubescentis lobis patulis rotundatis subæqualibus.

HAB. Rocky bushy places, Organ Mountains, at an elevation of about 3500 feet.

Frutex 2-4-pedalis. Folia 3-3½ poll. longa, 1-1¼ poll. lata. Pedicelli 2¼ lin. longi, graciles, glabri. Corollæ coccineæ, 1½-poll. longæ. Stylus glanduloso-pilosus staminaque inclusa. Ovarium pilosum.

VACCINIEÆ.

5804. Gaylussacia *bracteata;* caule fruticoso ramoso, ramis villosis, foliis petiolatis oblongis junioribus præsertim utrinque acutiusculis calloso-mucronatis margine revolutis subserrulatis utrinque villosiusculis vix pollicaribus, racemis pallidis axillaribus solitariis folio longioribus, bracteis ovato-lanceolatis acutis apiculatis ciliatis, laciniis calycinis subulatis villoso-ciliatis, corollis ventricoso-tubulosis glabris.

HAB. Summit of the Organ Mountains. *Fl.* March.

Frutex bipedalis. Folia supra viridia, subtus pallide ferruginea.

5805. Gaylussacia *villosa;* tota incano-villosa, caule fruticoso ramoso, foliis petiolatis oblongo-ellipticis obtusis calloso-mucronatis basi subattenuatis acutiusculis margine revolutis subcrenulatis reticulatis pollicaribus, racemis pallidis axillaribus solitariis folio longioribus, HAB. Organ Mountains, at an elevation of from 5-6000 feet. *Fl.* March.

Frutex bipedalis. Folia 8-10 lin. longa, 3 circiter lata. Corolla ignota. Drupa globosa, in sicco 8-sulcata, 8-locularis, loculis monospermis.

5807. Gaylussacia *parvifolia;* fruticosa, ramosa, ramis villoso-tomentosis, foliis petiolulatis ellipticis utrinque obtusis calloso-mucronatis margine reflexis minute crenulatis utrinque villosis supra demum glabriusculis semipollicaribus, racemis terminalibus abbreviatis 2-4-floris, bracteis ovato-lanceolatis acutis ciliatis, laciniis calycinis acuminatis tuboque villosis, corollis ventricoso-tubulosis angulatis pilosiusculis.

HAB. Summit of the Organ Mountains. *Fl.* March.

Frutex vix pedalis. Corolla alba, laciniis oblongis obtusis reflexis.

5808. Gaylussacia *angulata;* glaberrima, caule fruticoso ramoso, ramis angulatis, foliis oblongis obtusis breviter mucronatis basi attenuatis minute crenato-serrulatis supra nitidis reticulato-venosis, racemis axillaribus solitariis angulatis folio longioribus, bracteis oblongo-lanceolatis apiculatis ciliatis, laciniis calycinis brevibus ovatis obtusis ciliatis.

HAB. Organ Mountains, at an elevation of about 6000 feet. *Fl.* March.

Frutex 4-pedalis. Folia 12-15 lin. longa, 4½ circiter lata. Corolla ignota. Drupa subglobosa, 10-locularis.

5809. Gaylussacia *fasciculata;* caule fruticoso apice fasciculato-ramoso, ramis glabris, foliis petiolatis oblongo-ellipticis obtusis apiculatis apiculo obtuso calloso basi subcuneatis margine revolutis supra medium subserratis utrinque glabris coriaceis pollicaribus, junioribus utrinque pilosis, racemis pallidis axillaribus solitariis folio brevioribus calycibusque pubescentibus, bracteis membranaceis ovatis ellipticis obtusis ciliolatis, laciniis calycinis brevibus ovatis acutis, corollis ventricoso-tubulosis glabris.

Hab. Organ Mountains, at an elevation of about 4000 feet. *Fl.* March.

Frutex 1-2-pedalis. Folia supra viridia, nitida, subtus pallide ferruginea. Corolla angulata, dentata, dentibus reflexis. Stylus subexsertus.

ERICACEÆ.

475 et 5802. Leucothoe (Agastia) *Organensis* ; glabra, ramis dense fastigiatis, ramulis angulatis, foliis petiolatis ovato-ellipticis obtusis mucronatis basi cordatis margine valde revolutis integerrimis coriaceis reticulato-venosis, racemis axillaribus trifloris puberulis folio brevioribus, floribus pedicellatis, corollis ovato-cylindricis, ovario glabro.

Hab. In Sphagnum bogs on the Organ Mountains, at an elevation of about 6000 feet. *Fl.* January.

Frutex 4-6-pedalis. Folia conferta, 6-9 lin. longa, 3½-4 lin. lata, supra nitida. Calyx 5-partitus, laciniis ovatis acutis puberulis. Corollæ albæ ?, sub-3 lin. longæ, ore contractæ. Capsula depressa, hemisphærica.

ILICINEÆ.

5696. Ilex *buxifolia* ; glaberrima, foliis parvis elliptico-

LABIATÆ.

5827. Salvia (Calosphace) *macrocalyx*;* caule fruticoso erecto ramoso, ramis tetragonis villoso-subtomentosis, foliis brevissime petiolatis oblongo-lanceolatis acutis minute serratis supra villosis subtus tomentosis, floralibus parvis sessilibus ovato-rotundatis acutis supra glaberrimis subtus tomentosis deciduis, racemis simplicibus, verticillastris 4-8-floris, calycibus campanulatis dense fulvo-lanatis, labio superiore integro obtuso, inferiore bifido dentibus acutis, corollis calyce dimidio longioribus extus lanuginosis, labio superiore erecto, inferiore breviore integro apice bidentato, connectivis postice deflexis linearibus longitudinaliter connatis, stylo barbato.

HAB. Woods between the Organ Mountains and Novo Friburgo. *Fl.* April.

Frutex 4-6-pedalis, ramosus. Folia 2 poll. longa, 9 lin. lata. Racemi 6-9 poll. longi. Calyx campanulatus, 9-10 lin. longus, 6 lin. latus. Corolla pallide coccinea, 1½ poll. longa. Stylus exsertus.

VERBENACEÆ.

5829. Lippia *triplinervis*; fruticosa, erecta, ramosa, ramis piloso-pubescentibus, foliis confertis oppositis brevissime petiolatis ellipticis obtusis basi subcuneatis triplinerviis supra medium crenato-serratis utrinque adpresse pilosiusculis subtus punctatis, pedunculis axillaribus solitariis folia subæquantibus, capitulis hemisphæricis laxis paucifloris, bracteis ovatis obtusis pilosis tubo corollæ brevioribus.

HAB. Summit of the Organ Mountains. *Fl.* March.

Frutex bipedalis, ramosus, ramis fastigiatis. Folia ad apicem ramulorum conferta, subpollicaria, 6 lin. lata. Flores rosei. Calyx cylindricus, 5-dentatus, subbilabiatus. Stigma oblique capitatum. Fructus ignotus.

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* This is a perfectly distinct species, allied to S. *Mariana*, Mart.—G. B.

5830. Ægiphila *lanuginosa*; tota pagina superiore foliorum excepta fulvo-tomentosa lanuginosa, amis compresso-tetragonis, foliis breve petiolatis oppositis oblongo, lanceolatis acuminatis basi acutis margine revolutis integerrimis supra glaberrimis nitidis, cymis axillaribus multifloris pedunculatis, calycibus bilabiatis labiis utrinque bidentatis, corolla glabra.

HAB. Woods, Organ Mountains, at an elevation of about 4000 feet. *Fl.* March.

Frutex 6-pedalis. Folia 5-6 pollices longa, 1½ poll. lata. Petioli 9 lin. longi. Pedunculi folio breviores. Flores tetrameri. Corolla infundibuliformis, laciniis oblongis acutis, tubo æqualibus. Filamenta infra lacinias inserta iisdem paulo breviora. Antheræ oblongæ. Stylus apice bifidus. Fructus ignotus.

BEGONIACEÆ.

602. Begonia *confertiflora*; suffruticosa, erecta, ramosa, ramis pedunculis petiolisque hirsutis, foliis subinæquilateris oblongis acuminatis basi subcordatis minute serrato-dentatis supra glabris subtus nervo medio hirsutis, stipulis magnis oblongis obtusis basi attenuatis, cymis axillaribus

panicula dichotoma, floribus roseis fœmineis basi bibracteatis, bracteis coloratis ovatis acutis, petalis 5 subinæqualibus ovatis vel ovato-oblongis obtusis, capsulæ alis duabus parvis, tertia majori rotundata.

HAB. In dry woods on the Organ Mountains, at an elevation of upwards of 6000 feet. *Fl.* March.

Herba basi suffruticosa, bipedalis. Folia 4 poll. longa, 15 lin. lata, supra viridia, subtus pallida.

Apparently near B. *pulchella*, Raddi, but distinguished by the unequal wings of the capsule.

606. Begonia *Hookeriana*; fruticosa, erecta, ramosa, minute rufo-lepidoto tomentosa, foliis valde inæquilateris fere pedalibus acutis basi subcordatis duplicato-dentato-serratis, stipulis coriaceis oblongo-lanceolatis, cymis axillaribus dichotomis multifloris, floribus parvulis, fœmineorum petalis 5 oblongis obtusis æqualibus, capsula subglobosa, alis 3 æqualibus rotundatis.

HAB. In dense virgin forests in the Organ Mountains, at an elevation of about 3000 feet. *Fl.* February.

Frutex 5-6-pedalis. Folia 10-12-pollicaria, 4-5 poll. lata, pennivenia.

PROTEACEÆ.

615. Rhopala *Organensis*; arborea, ramulis compresso-angulatis, petiolis spicis floribusque pubescenti-tomentosis, foliis alternis pinnatis, foliolis 4-5-jugis oblongis vel ellipticis acutis basi inæqualibus acute serratis supra glabris subtus pubescentibus reticulatis, spicis axillaribus folio brevioribus.

HAB. Rare, in forests on the Organ Mountains, at an elevation of about 3500 feet. *Fl.* February.

Arbor 60-pedalis. Foliola 2½-3½ poll. longa, 12-15 lin. lata. Glandulæ hypogynæ 4, distinctæ.

THYMELACEÆ.

5849. Lagetta *alpestris*; dioica, frutica, subdichotomo-ramosa, foliis alternis breve petiolatis elliptico-oblongis obtusis basi subcuneatis margine revolutis utrinque glaberrimis, pedunculis axillaribus solitariis bifloris folio brevioribus, floribus subsessilibus, perigonio 4-fido, lobis rotundatis utrinque pubescentibus.

HAB. Bushy places on the Organ Mountains, at an elevation of from 5-6000 feet. *Fl.* March.

Frutex 4-pedalis. Folia ad apicem ramulorum approximata, 1½-2 poll. longa, 8-10 lin. lata. Perigonium tubulosum deciduum. Ovulum unicum. Stylus brevissimus terminalis. Stigma capitatum, echinatum. Drupa ovata, monosperma, 4 lin. circiter longa.

MONIMIACEÆ.

5863. Tetratome *cinerea*; foliis oblongo-ellipticis acuminatis basi acutis versus apicem distanter argute serratis margine subrevolutis, pedunculis masculis axillaribus fasciculatis vel subracemosis trifloris, perigonio campanulato extus cinereo adpresse pilosiusculo quadrifido.

HAB. Woods in the Organ Mountains, at an elevation of about 4000 feet. *Fl.* January.

Frutex 6-pedalis, ramosus. Rami teretes, ad petiolorum insertionem compressi. Folia opposita, petiolata, 4½ poll. longa, 21 lin. lata. Petioli vix 3 lin. longi. Perigonium 1⅓ lin. longum, laciniis subæqualibus duabus rotundatis

subovatis, ad basin latis confertis, superne repandis, faciebus superioribus polyëdris cum inferioribus rotundatis, obscure viridibus et versus apicem rubris; areolis apicem mamillarum positis, albo-lanatis mox nudis; aculeis exterioribus sub 9 (3''' longis) subæqualibus irregulariter patentibus incurvatulis eburneis 4 inferioribus nec non longioribus, centralibus 1-2 duplo longioribus, nascentibus brunneis deinde etiam eburneis brunneo-sphacelatis rectis erectis, omnibus rigidis subulatis.

Patria Guatimala. Flores nondum vidi.

Altitudo Plantæ 2''.

Diameter 1¼''.

A *Mamillariâ versicolore* (Scheid. Bulletin de l'Acad. de Berl. V. 494) omnino præter colorem differt.

On the HUON PINE, *and on* MICROCACHRYS, *a New Genus of* CONIFERÆ *from Tasmania; together with Remarks upon the Geographical Distribution of that Order in the Southern Hemisphere; by* JOSEPH DALTON HOOKER, M.D. R.N., *Botanist to the Antarctic Expedition.*

(*With a Plate.* TAB. VI.)

Long as the Island of Tasmania has been colonized by Europeans, its noblest trees, and those too belonging to that most readily recognized and important Natural Order (the "*Pines*"), have, until quite lately, been little understood by Botanists. Whilst the continent of Australia was known to possess numerous species of *Callitris* and *Podocarpus*, and New Zealand has been celebrated as yielding a remarkable proportion of *Coniferæ*, Tasmania was generally supposed to produce much fewer of these most useful trees. Such, however, is not in reality the case; for the island in question is now proved to contain a greater number of species in proportion to its area, and these of more peculiar forms, than any other country. The fact of their having so long remained unknown, or at least unrecorded, is mainly owing to the individuals of each species being either very few in number, or else remarkably local, and consequently confined within narrow areas; and further, to the want of an intelligent class of natives, such as inhabit New Zealand, who may direct the man of science, or the settler, to what tradition and experience have taught the aboriginal inhabitant to value in his savage state. Many of the species, also, are limited to the more remote and almost inaccessible parts of the island; only bearing flowers after attaining a considerable size, and they are not easily procured in a state fit for examination. Such is eminently the case with the *Huon Pine:* it is confined to the western and southern parts of the colony, growing in dense forests, or amongst mountains covered with a vegetation the most difficult to penetrate. It has been seen by few Europeans, save the wood-cutter or the convict; itself being the only inducement for a Botanist to visit that tempestuous and rainy quarter of Tasmania. Mr. Gunn, to whom the botany of this part of the globe is so greatly indebted, and to whose zeal and perseverance we owe the discovery of nearly one half of its *Coniferæ,* never found the *Huon Pine* in its native state; and of the three men of science who have done so, Sir J. Franklin, Mr. Backhouse, and Mr. A. Cunningham, the latter alone has been able to procure fructification, and that but imperfect.

Next to the *Huon Pine,* the species called the *Celery-topped* far from the locality of the Pines themselves, can be considered as a voucher for the vegetation of the marshes in question, we must confess ourselves still ignorant of any plant so abundant as to have suggested an appellation for an area perhaps as large as Middlesex, though in an island smaller than Ireland.

In 1825, Mirbel's Paper on the *Geographical Distribution of the Coniferæ* appeared, in which Mr. Brown enumerated, besides many other new individuals of this Order, two from Tasmania: the *Podocarpus alpina*, Br., which inhabits the summit of Mount Wellington, and *Callitris Australis*, Br., or the *Oyster-Bay Pine.* These, with the *Podocarpus asplenii-folia* of Labillardière, were the only *Coniferæ* known to grow in this island, until the collections of the late lamented Mr. Lawrence arrived, containing a species of *Podocarpus?* which has been seen by no subsequent Botanist. In 1810 Mr. Cunningham gathered the *Huon-Bay Pine* in an imperfect state, and from his specimens the fructification will be here described. Lastly, in 1836, Mr. Gunn discovered no fewer than three species of the genus *Arthrotaxis*, and another *Pine* belonging to a new genus to be here described (*Microcachrys*, nob.); since which he has added a second *Callitris*, increasing the number of *Coniferæ* from four to ten. *Arthrotaxis* was founded by the late Professor Don,* on two of Mr. Gunn's plants contained in Dr. Lindley's herbarium.

Before proceeding to an enumeration of the Tasmanian *Coniferæ*, I may be allowed to offer a few remarks on the distribution of that Order in the southern portion of our globe, seeing it has been so greatly augmented since the publication of Mirbel's valuable Memoir.†

One of the most striking features of the *Coniferæ* in the Southern Hemisphere is their general dissimilarity to those of the Northern. Yet, although the genera be fewer in number, they have an equally wide range; while their species, though bearing a larger proportion to the genera, are confined within much narrower limits. Thus, out of the ten genera, and between fifty and sixty species, scattered over the surface of the globe south of the Equator, *Arthrotaxis* and *Microcachrys* (Hook. fil.) are the only two that are restricted to a single locality. Of the first of these there are but three species, all limited to an area not greater than Yorkshire. *Araucaria*, on the other hand, of which there are five known species, has them very widely dispersed, only one country, Australia, presenting two of them.

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* Don in Linn. Trans. v. 18, p. 171.

† Vide Mirbel, in Mémoires du Muséum. v. 13, p. 38.

Although some uncertainty still exists respecting the kinds of *Coniferæ* inhabiting the vast tracts of the Cape Colony, and the rarely visited mountains of Chili and Patagonia, those of Australia and New Zealand are now so well understood, that the following notices may be considered as probable approximations to their actual distribution.

I. ARAUCARIA,* *Juss.* This genus includes five known species, each with a remarkably narrow range, though together they form a widely diffused genus: 1. A. *excelsa*, Aiton, the *Norfolk Island Pine*, is probably confined to that island; one of the Australian species (A. *Cunninghami*) which had been supposed the same, having proved very distinct from it, and the New Caledonian one not being fully authenticated. 2. A. *Bidwilli*, Hook. (in Lond. Journ of Bot.

bourhood of Rio de Janeiro, and is more abundant in the province of St. Paul's (as I was informed in that country). It is not improbable that the species, stated to have been found in New Caledonia by Cook, may prove distinct from any of the above.

II. DAMMARA, *Lam.* 1. D. *australis*, Lamb. the *Kaudi*, *Cowdie*, or *Kauri Pine* of New Zealand, grows on the mountainous regions in the Northern Island of that group. Mr. Hinds, in his description of the vegetation of the Fejee Islands, mentions a species said to exist there. (vide *Lond. Journ. Bot. v.* 1, *p.* 671.)

? III. JUNIPERUS, *L.* 1. *J. uvifera*, is described by Don as a native of Cape Horn; this, however, must be considered a very doubtful species. A second is mentioned by Mirbel, J. *Capensis*, Lam.

IV. THUJA, *L.* This genus, in the Southern Hemisphere, belongs almost exclusively to South America. 1. T. *Chilensis*, Hook, (T. *cuneata*, Dombey mss. ? T. *Andina*, Pœppig,) grows on the mountains of S. Chili, Valdivia, &c. 2. T. *tetragona*, Hook. is the famous "Alerse" of Chili and of the Island of Chiloe.* 4. T. *Doniana*, Hook. is a native of the northern island of New Zealand.

? V. CUPRESSUS, *L.* 1. C. *Africana*, Mill. mentioned also by Mirbel, is probably a species of the following genus.

VI. PACHYLEPIS, *Brongn.* Three species are enumerated by Brongniart, who founded this genus.† 1. P. *Commersoni*, from Mauritius. 2. P. *cupressoides*, and 3. P. *juniperoides*, both from the Cape; the latter is doubtful, and perhaps not distinct from the former. Besides these there is another Cape plant in the Hookerian Herbarium, named *Callitris stricta*, Schlect. mss. (Drège); but as the scales of this genus vary much in form with age, I could not pronounce the imperfect specimens distinct. Dr. Wallich has sent another *Pachylepis* from South Africa certainly distinct from P. *cupressoides*, which may however be the C. *stricta*.

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* London Journal of Botany, v. 3. p. 144. t. III.

† Ann. Sc. Nat. v. 30, p. 176.

VII. CALLITRIS, *Vent.* Of this genus there are probably at least twelve or fifteen individuals in Australia. The North African C. *quadrivalvis*, is still retained in *Callitris* by M. Brongniart, who removes the S. African species to *Pachylepis*. I am, however, inclined to think that the forms from these three widely separated localities will eventually prove to belong to one and the same genus. Spach more recently breaks up *Callitris* into three genera, confining that name to the original N. African plant, and applying Mirbel's name of *Frenela* to the Australian species.

VIII. ARTHROTAXIS, *Don.* Founded on two Tasmanian plants, 1. A. *selaginoides*, and 2. A. *cupressoides*; to these another has been added, 3. A. *laxifolia*, Hook. (Ic. Plant. t. 573).

IX. MICROCACHRYS, *Hook. fil.* vid. infra, comprising a single species, discovered by Mr. Gunn in the interior of Tasmania.

X. PODOCARPUS, *L'Hér.* The most extensive of all the southern genera of *Coniferæ*, upon which Mr. Bennett has published an excellent dissertation.* There are three species from Australia, 1. P. *elata*, Br. 2. P. *spinulosa*, Br. 3. P. *ensifolia*, Br. ;—and two from Tasmania, 4. P. *alpina*, Br., 5. P.

There are two Brazilian, and lastly, three Cape species of this genus, making about thirty southern species in all.

XI. DACRYDIUM, *Banks;* a much rarer genus than the former. 1. D. *cupressinum*, Sol. the *Dimou Pine* of New Zealand. 2. D. *Colensoi*, Hook. (Ic. Plant. t. 548) from the same island. 3. D. *laxifolium*,* n. sp.; also from New Zealand. 4. D. *Franklinii*, Hook. fil., the *Huon Pine;* vide infra.

XII. PHYLLOCLADUS, *Rich.* 1. P. *aspleniifolia*, Rich. "*Celery-topped Pine*" of Tasmania, and 2. P. *trichomanoides*, Don, the "*Tauehaha*" of the New Zealanders.

From the above list it will be seen that four genera are peculiar to the Southern Hemisphere, *Araucaria*, *Phyllocladus*, *Microcachrys*, and *Arthrotaxis*. Three others have their maximum to the south of the tropics, *Callitris*, *Podocarpus*, and *Dacrydium*. *Dammara* has one species in each hemisphere. *Thuja* is equally divided between the two; whilst *Juniperus* and *Cupressus* are barely, if at all, represented, except perhaps the latter by *Arthrotaxis*.

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* DACRYDIUM *laxifolium*, Hook. fil.; caule humili fruticoso, ramis prostratis laxe ramosis gracilibus, foliis undique insertis sparsis patentibus linearibus obtusis coriaceis supra concavis supremis imbricatis ovatis multo brevioribus dorso carinatis, fructibus terminalibus solitariis erectis.

HAB. New Zealand, near the summit of Tongariro. *Mr. Bidwill* (No. 5), *Colenso* (No. 60.)

Whether or not the present be an alpine form of some larger species, I am unable to say. It is marked by Mr. Bidwill as "Rima," from which I suppose that gentleman considered this plant to be a state of the D. *cupressinum*; but it is a wholly different species from that, in no way resembling what might from analogy be assumed as the mountain form of that tree. I am indeed more inclined to suppose it a strictly alpine species, like the *Podocarpus alpina*, Br. of Tasmania, which is only known as a small mountain plant. The leaves of the present are very lax on the stem, like those of a *Sedum*, patent and more flaccid than is usual amongst the *Coniferæ*; the largest are not above two lines in length, convex or keeled below, and more or less concave above; they are contracted at the base and not decurrent on the branches: tho-e at the apices are much smaller and closely imbricated. The whole length of our specimens of the entire plant, which are very good, does not exceed a span. The fruits are abundant, terminal, and erect.

If we divide the regions which these *Coniferæ* inhabit into four, namely Australia, New Zealand, South America and South Africa, it will appear that they are very unequally diffused, and that their relative abundance is not regulated by the extent of surface, which might be expected to be the case with a group composed of peculiarly local species. Only one of the genera is common to them all, *Podocarpus*, it is in all respects the most widely diffused genus of *Coniferæ*, as it is one of the most extensive. *Araucaria* comes next, being found in three of the regions, Australia, New Zealand,* S. America. *Thuja* has been detected in two only, America and New Zealand; *Callitris*, including *Pachylepis*, in Australia and Africa; *Dacrydium* and *Phyllocladus* in Australia and New Zealand. *Juniperus* is confined to America, if indeed it really exists in the Southern Hemisphere, and *Arthrotaxis* and *Microcachrys* to Tasmania.

In conclusion, I shall arrange the genera in the order of their relative abundance in the countries specified above.

I. AUSTRALIA is by far the richest, containing as it does seven genera and probably twenty-six species, thus: *Callitris* 12, *Podocarpus* 6, *Arthrotaxis* 3, *Araucaria* 2, *Microcachrys* 1, *Dacrydium* 1, *Phyllocladus* 1. It also exhibits the most striking coniferous vegetation, and is the only country possessing any two peculiar genera.

increases in proceeding to the westward from the African continent in the southern hemisphere; and in another point of view, Australia may be considered the centre of their development, as they are not only most abundant there, but the forms of New Zealand on one side, and of Africa on the other, resemble more those of Australia than those of America, or one another.

The Tasmanian species of *Coniferæ*, so far as is at present known, are peculiar to that island, and more local there than in any other part of the globe. If *Pachylepis* be regarded as a subgenus only of *Callitris*, then this island has representatives of all the genera peculiar to the southern hemisphere, except *Araucaria;* besides possessing the only two that are not common to two of the regions enumerated above. I have before considered Tasmania as part of the Australian region; but if we go on to compare it with the vast country lying to the north, it will be found still more peculiar in its Coniferous vegetation, as a part of that tract, than the latter as a whole was shown to be; for whilst Australia has only three of the genera, Tasmania has six.

Although, in a measure, anticipating the "*Flora of Tasmania*," for which ample materials are in my possession for publication, under the authority of the British Government, I shall here offer a few remarks on the different species of that island, before proceeding to describe the noblest of them all, the *Dacrydium Franklinii*, or *Huon Pine.*

1. CALLITRIS, *Vent.*

This genus, which was divided by Mr. Brongniart into two, has been further modified by Spach, who separates from both the North African C. *quadrivalvis*, for which alone Ventenat's name of *Callitris* is retained. The differences between these are excellently displayed by Spach in the "Suites à Buffon" (Hist. Nat. des Végét., v. 11, p. 345), though I should not attach the same importance to them as does that acute observer. The numerous scales of the Australian group are certainly a remarkable character.

Yet that number and their relative size are so variable as considerably to diminish their value as a diagnostic mark. The ternary arrangement of the seeds, much dwelt upon by Brongniart, as typical of the Australian form, is a striking and prominent character in our *Cape* species, whose seeds are hardly winged. The tuberculated receptacle is not constant in the Australian species, nor are the scales of the cones always alternately smaller. The wings of the seeds differ much in size, some being quite as broad as those of *Callitris* or *Pachylepis*; the seeds themselves are not always osseous; one species of the latter genus having the seed much more osseous than any Australian *Callitris*, and almost wingless. I have not been able hitherto to detect any difference, except that they bear three anthers or pollen-thecæ, between the male amenta of *Callitris* and *Pachylepis*, though Brongniart suggests that such may exist. The leaves of the Cape species are sometimes decussately opposite, and regularly so throughout a great part of the branches; those of the northern plant are arranged in fours, and of the Australian in threes. The latter is the most remarkable number amongst *Coniferæ*, and is accompanied with two cotyledons, which is also the case in one species of the Cape *Pachylepis*. The pollen grains in *Callitris*, *Frenela*, and *Pachylepis*, are

Hab. Tasmania, on the east coast; *Mr. Backhouse; Gunn*, n. 543. Flinders's Island, Bass' Straits; *Backhouse.*

Were it not for the noble suite of specimens sent by Mr. Gunn, under the same number, I should certainly have been led to make at least two species of this, so different is the character of its extremes. The cones when mature are either smooth or much corrugated, their angles acute or blunt, the colour pale grey and shining, or brown and opaque; in the centre of the cone there is generally an elevated woody body, with three divergent arms, one opposite each of the smaller scales, these sometimes fork again; in other cases this is reduced to a single short style, or may be wholly wanting; it appears formed of three abortive, confluent ovaria. The seeds vary much in size, and in the shape and breadth of their wings.

This species forms a large tree (according to Mr. Backhouse) 50-70 feet high, and 6-9 in girth, sometimes giving a peculiar feature to the landscape from its pyramidal form. Mr. Gunn states its height to be 25-30 feet, and its trunk a foot in diameter, whence there may be another species yet undescribed.* I have never seen much use made of the wood, which is alleged not to be durable. It is very fragrant; and according to Mr. Backhouse, obnoxious to bugs.

2. C. *Gunnii*, Hook. fil.; strobilis subsolitariis v. glomeratis breviter pedunculatis ovatis, valvis lignosis linearibus obtusis v. subacutis dorso convexis lævibus v. longitudinaliter rugosis, receptaculo lævi, columna centrali brevi simplici v. tricruri v. nulla, seminibus late ovatis osseis ala plerumque brevissima.

"Native Cypress," *incolarum.*

Hab. Tasmania, South Esk River, *Mr. Gunn* (n. 542).

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* In Mr. Backhouse's "Narrative of a Visit to the Australian Colonies," in mentioning the vegetation of Oyster Bay, he enumerates the *Oyster Bay Pine* and also the *Callitris pyramidalis* among the native trees of that locality; from which remark, and the discrepancy between his own and Mr. Gunn's dimensions of the timber, it is more than probable that there are three Tasmanian species of *Callitris.*

Mr. Gunn says this species forms a small tree, 6-10 feet high, called the "*Native Cypress.*" It is very distinct from the former, especially in its ovate, generally larger, but very variable cones, and the harder, narrower, and unwinged seeds.

2. ARTHROTAXIS, *Don.*

Mr. Don's excellent description of this genus is published in the 18th volume of the *Linnæan Society's Transactions;* the character is not, however, complete, owing to the absence of perfect specimens. The embryo, which was wanting, I have found to be inclosed in a rather thin coat of albumen; it is stout and cylindrical, occupying nearly the whole length of the seed, and furnished with two cotyledons, which Mr. Don rightly presumed it would possess. The A. *laxifolia*, Hook., is the only other known species, A. *tetragona* proving, on examination of its fruit, to belong to a different and new genus, *Microcachrys* (nobis). The pollen of *Arthrotaxis* is, like that of *Callitris*, formed of transparent spheres, generally, if not invariably depressed, with a central, more opaque nucleus; in the young plant it is larger, much more depressed, and hence discoid.

1. A. *selaginoides*, Don, *in Linn. Trans. v.* 18, *p.* 172, *t.* 14;

which I have seen was in the bed of the Pine River, down the course of which it had been washed, and, grounding, had formed the nucleus of a small island; it was about 15 feet long, and though prostrate quite alive, having shot up several erect branches, to the height of 8 or 10 feet, covered with a lively green foliage, and bearing abundance of fruit. Mr. Gunn describes it as growing at Lake St. Clair to the height of 25-30 feet, with trunks 18 inches to 2 feet in diameter; one very old one, hollow in the centre, measured 15 feet round, at 3½ feet from the ground, from whence it tapered rapidly upwards.

3. A. *laxifolia*, *Hook. Ic. Plant. t.* 573.

HAB. Tasmania, Falls of the Meander River, *Gunn*, (n. 369?)

Some doubt was expressed in the "*Icones Plantarum*" of the validity of this species, neither the flowers nor fruit being known. Another specimen, with cones, received from Mr. Gunn, seems to establish its claims to specific distinction. The cones are nearly the size of those of A. *selaginoides*, with the seeds smaller and of a different form, being (including the wings) broadly oblong, their sides parallel, and the base and apex emarginate; the wings are thick, and formed of two membranes inclosing a spongy substance, as in A. *cupressoides*, but they are broader above than in that plant; the embryo is altogether like that of the two former. The leaves are as represented in the "*Icones Plantarum*," in fewer series, shorter, smaller, and more lax than in A. *selaginoides*.

3. MICROCACHRYS, Nov. gen.

Flores in ramis diversis monoici. MASC. *Amenta* terminalia, ovata. *Squamæ antheriferæ* unguiculatæ, peltatæ. *Antherarum* thecæ 2, divaricatæ, globosæ. *Pollen* trigonum, trinucleatum. FŒM. *Amenta* decurva v. cernua, oblonga. *Squamæ* laxe imbricatæ, patentes, ovatæ, concavæ, naviculares. *Ovula* ad basin squamarum solitaria. *Strobilus* e squamis divaricatis foliis subconformibus sed minoribus patentibus, apicibus acuminatis recurvis, medio concavis. *Semina* solitaria, erecta, omnino nuda, squama submajora, ovata, compressa; testa scariosa, membranacea, hyalina.—Arbuscula *procera,* 15 ad 25 *ped. alta, facie verosimiliter* Cupressi, *sed foliis* Dacrydii. Folia *in plantis junioribus quadrifariam inserta, in senioribus, imbricata, ramo appressa, rhombeo-ovata, dorso carinata.* Amenta *ad apices ramulorum plurima;* mascula *erecta, sub* 2 *lin. longa, cylindracea;* fœminea *curvata, cernua, repandula, e squamis* 8-10 *formata.*

1. MICROCACHRYS *tetragona,* Hook. fil.; Arthrotaxis tetragona, *Hook. Ic. Plant. t.* 560.

HAB. Tasmania, on the banks of Lake St. Clair, abundant, *Gunn* (366).

This genus is distinguished from *Arthrotaxis* by the very different form and structure of its amenta, which are not broader than the branches; by the solitary, exposed seed; and by the hyaline membranous testa surrounding it: from *Cupressus* the same character will also separate it. The pollen is of a different form from that of either of those genera, and the foliage also.

4. PODOCARPUS, *L'Hérit.*

1. P. *alpina,* Brown, *in Mirbel, Essai sur la Géographie des*

present, are, as Mr. Bennett describes in his able paper, of a curved oval form, with dark granular extremities. Of P. *dacrydioides* I have seen only very old and perhaps mutilated grains, which were certainly trigonous with three opaque nuclei, very much like those of *Microcachrys*.

2. P.? *Lawrencii*, Hook. fil.; foliis laxis subdistichis patentibus linearibus utrinque attenuatis pungentibus.

HAB. Tasmania, *Lawrence*, n. 218.

This is a very distinct species, though possessing neither flower nor fruit; still the habit and appearance are altogether like P. *spinulosa*, Br., and the woody tissue presents a single series of minute glandular dots. The twigs are slender, the leaves nearly half an inch long, slightly curved, about two lines broad, of a pale green, somewhat glaucous underneath.

I have been anxious so far as materials exist for that purpose to record in this Natural Order the names of those individuals who have done most for the Botany of this island. Since the days when Mr. Brown collected his extraordinary herbarium, and first brought to light a host of Tasmanian plants in the "Prodromus Floræ Novæ Hollandiæ," there has been no more successful Botanist for the time than the late Mr. Lawrence, who commenced forming a herbarium of the whole island, a work which Mr. Gunn has almost concluded.

5. PHYLLOCLADUS, *Rich.*

1. P. *aspleniifolia*, Rich.; Podocarpus, *Lab. Nov. Holl. t.* 221. "*Celery-topped*," or "*Adventure Bay Pine*" of the colonists.

HAB. Tasmania, in the mountainous and humid parts of the colony.

This elegant tree, like its New Zealand congener, seldom exceeds 50-60 feet in height; the trunk is slender and quite erect, very useful for small masts. The bark is also used to tan leather with, for which purpose it is well adapted. The pollen-grains of this species are similar to those of P. *trichomanoides*; they are less curved, much broader than in *Podocarpus*, and also flatter and more transparent.

6. Dacrydium, *Sol.*

1. D. ***Franklinii***, Hook. fil.; ramis cum foliis tetragonis ramosissimis, foliis parvis cruciatim oppositis ramo appressis rhombeo-ovatis subacutis dorso carinatis, amentis fœmineis terminalibus curvatis cernuis v. pendulis 5-7 floris, fructibus laxe spicatis minimis, squama parva, squamula fructifera concava antice fissa, semine parvo erecto elliptico-compresso subdrupaceo (Tab. VI.)

" *Huon Pine*" of the Colonists.

Hab. Tasmania, Huon River; *Gunn*, n. 1248; McQuarrie Harbour, *Mr. A. Cunningham.*

This is certainly the most interesting and valuable tree of Tasmania; but it has been seen by few scientific persons. Mr. Cunningham's specimens are very imperfect, consisting merely of the ends of branches, about four inches long, much divided in a fasciculated manner, the ultimate divisions, which are exceedingly numerous, are about one quarter of an inch long and a line in diameter, very brittle, and covered with the leaves. The latter are quadrifariously imbricated, less than half a line in length, dark-green, and shining when dry, acutely keeled at the back, having a depression on each side of the keel. The spikes of fruit are inconspiin the notch; the outer coat was probably fleshy, but now shrivelled, and contains a loose hard nut, attached at its base and apex to the outer withered coat, and containing an erect seed of the same shape as the seed, fixed by the base, and with a black apex; the testa is very thin and delicate, the albumen fleshy and apparently copious, with a central hollow for the embryo, which was not seen in those very unfavourable specimens, but is probably very small; the whole length of the seed is under half a line; most of them appear abortive, and many contain the larva of a small coleopterous insect, which is probably deposited before the closing of the foramen, and which feeds on the albumen, perhaps the embryo also, which was never found.*

Mr. Cunningham remarks of it, that it forms a tree of irregular growth at McQuarrie Harbour, from 60-70 feet high, and 6-24 in circumference.

Mr. Backhouse, in his valuable ms. notes, in our possession, (and he is one of the few scientific persons who have seen this plant) says of it, that "it forms a noble tree, growing in swampy places, of a widely pyramidal form; the branches rather droop, and the ultimate ones are pendent, like those of *Cypress* or *White Cedar*; the trunk attains a height of about 100 feet, and is from 22-26 in girth. The wood burns briskly, giving out a pleasant aromatic smell; it is close-grained, valuable for ship-timber, and all purposes to which pine-wood is applied, and may be obtained in logs 40-50 feet long." Mr. Cunningham's specimens do not present any of the pendulous branches; such are, however, sent by Mr. Gunn; they are nearly two feet long, and covered with longer and more slender and flaccid twigs than the others.

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* In one respect, namely, the maturation of many seeds at the apex of each fruit-bearing branch, this species differs remarkably from any of its congeners, and from *Podocarpus*. The plurality of the ovuliferous scales, and their arrangement on an axis, in all respects analogous to that of the ordinary strobilus, and particularly similar to that of *Microcachrys*, is a further confirmation of the view Messrs. Brown and Bennett have taken of the place of the *Podocarpi* and *Dacrydia* in the Nat. Order *Coniferæ*. They remove them from the *Taxineæ*, and associate them with the *True Pines* (vid. Brown and Bennett in Plant. rar. Jav. p. 37). The arrangement of the female inflorescence in the form of a strobilus being the ordinary one amongst *Coniferæ*, the *Huon Pine* may in this particular be regarded as the most fully developed of the little group, including *Phyllocladus*, *Podocarpus*, and *Dacrydium*, to which it belongs. D. *Colensoi*, to which the present bears a considerable resemblance, produces also several terminal female flowers, but one only ever arrives at maturity. *Phyllocladus* has often several mature seeds; but the foliaceous nature of the parts very much marks the resemblance of its inflorescence to an ordinary strobilus, which is sufficiently evident in *Dacrydium Franklinii*.

The most interesting account of the Huon Pine that I have ever seen, was written by my friend Mr. Lemprière, to whom I am indebted for much kindness showed during a short visit I made to him, in company with Sir John and Lady Franklin. In* Mr. Lemprière's account of McQuarrie Harbour, he says:

"The *Huon Pine* unites great beauty to extensive utility. It attains the height of seventy feet; in circumference it seldom exceeds fifteen. It grows in a pyramidal form, extending its limits to a great distance, when smaller branches droop, something in the same manner as the Weeping Willow; the colour of the foliage is rich green. The *Huon Pine* affords an excellent substitute for deal; and is, indeed, in many respects superior to that wood. For ship's decks and interior, cut to proper sizes, were rolled into the river, with hand-spikes or levers. The next process was to fix a hundred or more of these logs together, in the form of a raft, the outside logs being attached to the centre ones by iron chains. The raft was towed to the settlement by a launch or two. Sometimes in bad weather the chains gave way, and the logs drifted about in every direction. Such accidents always occasioned much trouble; and indeed it seldom happened that the whole number of logs was recovered. When the raft arrived at the settlement, the unfortunate prisoners' severest test began: for they had to wade to their middles for hours at a time with hand-spikes, to roll the timber up. The logs were piled in stacks, sometimes thirty feet high. Whenever the men were so employed, the Commandant used to allow them to receive a small quantity of spirits. We recollect seeing one of these logs, which measured twelve and a half tons. The best of the logs were shipped to Hobart Town; some were cut up by the sawyers, of whom there were constantly nine or ten pairs at work, into boards, also for Hobart Town; the remainder were either reserved for use in the settlement, or, if too short, or otherwise objectionable, they were thrown in to fill up the quays and other places. Many a log have I seen thus employed, which would now be of the greatest service in the Government timber-yards, but at that time they were considered of little or no value. Gum, myrtle, and other woods, which would not float, were brought to the settlement two at a time, lashed one to each side of a large launch. There is also a tree which grows on Philip's Island, called the 'Hard Wood,' which would answer many of the same purposes for which *Lignum Vitæ* is now used. *Huon Pine*, however, is the staple commodity of McQuarrie Harbour, and no doubt, if thrown open to the public, would not only enrich speculators, but prove a general benefit to the colony: it is a wood much sought after for its quality, and is far superior to the pine imported from New Zealand; and for many purposes to the cedar of New South Wales. Although an immense draught on the stock of *Huon Pine* at McQuarrie

Harbour took place during the time that the settlement existed, there remains sufficient to supply the whole colony for years to come. I am informed by Mr. Hoy, late master-shipwright at McQuarrie Harbour, and now filling the same important situation at Port Arthur, and who was the last person to leave the place, that from ten to twelve thousand tons might be obtained within one mile of the waterside, and a considerable part of that within one-half the distance. As a proof of the capabilities of McQuarrie Harbour, we would state, that during the period (about seven years) Mr. Hoy filled the situation of master-shipwright at the settlement, the following work was performed in the dockyard alone.

"The brig *Cyprus* was rebuilt. The brigs *Tamar, Isabella, Frederick, Adelaide,* averaging about one hundred and thirty tons each, were built; also the barque *William the Fourth* of two hundred tons; the cutters *Charlotte, Clyde,* and *Shamrock,* of about fifty tons each; the schooners *Penelope, Shannon, Badger, Kangaroo, Industry,* of about twenty-five tons each; twenty-two launches, of from five to ten tons each; forty-six small boats. Previous to Mr. Hoy's arrival, the brig *Derwent,* schooners *Sorell* and *Despatch,* sloop *Oposuum,* lighter *James Lucas,* and several launches and whale-boats had been built. This does not include the boats for the use

		£	s.	d.
Maintenance, &c., of eight sawyers and twenty-two labourers for twelve months . . .		547	0	0
Saws, piles, axes, wedges, &c.		250	0	0
Freight of ten cargoes, at an average of one hundred tons each		1500	0	0
Total .		2297	0	0
36,000 cub. feet of pine, at 2*s*. 6*d*. per foot	£4500	6833	0	0
140,000 superficial ditto, at 4*d*. per foot .	£2333			
Profit . .		4536	0	0

"So valuable was *Huon Pine* in Hobart Town, that in 1827 the Commandant was informed by Government, that it was more profitable to send supplies of that wood up, than to build vessels. Good oars were made at the settlement; trenails were also shipped in great quantities."

I am much gratified in being able to attach the name of the late excellent Governor of Tasmania to so remarkable a tree, and one, too, quite peculiar to that island, and belonging to a most interesting Natural Order. The services of Sir John Franklin as an officer, a traveller, and man of science, are too well known and appreciated to require comment here; but to his zealous cooperation in all the objects of the Antarctic Expedition, to the kindness shown by him, Lady Franklin, and their family, towards the officers of the *Erebus* and *Terror*, and to the unwearied zeal and unexampled liberality of both those enlightened individuals in forwarding the cause of science in that colony, it behoves me in duty and in gratitude to record my obligations.

TAB. VI. DACRYDIUM FRANKLINII. *Fig.* 1. Fructiferous branchlet. *f.* 2. Fruit with its scale. *f.* 3. Side view of the same. *f.* 4. Fruit, cut through vertically: *magnified.*

BOISSIER. *Spanish Botany: Malaga and its Environs.*

(*Continued from Vol. I. p.* 411.)

Malaga, like Valence, still shows its Arabic origin in the labyrinths of narrow crooked streets, lanes without any thoroughfare, and numerous odd turnings which puzzle the stranger, and render long practice necessary to enable him to find his way about the city; but here the general aspect is brighter and clearer, the pavement better laid, and the houses freshly painted, and almost all of them equipped with balconies. In the Merchants' Quarter the style of the shops is perfectly oriental. They are long and narrow, and separated from the street by the bench or counter, which a customer never passes, but across which the goods are shown and sold to him.

The public promenade or Alameda, is planted with *Melia Azedarach* (Pride of India) *Gleditsia* and *Oleanders*. There are also several shrubs of the beautiful *Mimosa Farnesiana*, called *Carambuco* by the Andalusian women, who adorn their lovely black tresses with its bunches of yellow and highly-scented flowers. Hither, in the evening, come all the population of Malaga, to enjoy the refreshing sea-breeze, and to meet their acquaintances. The *aguadores* may be seen in all directions, lauding their iced-water and *Azucarillos*, large lumps of porous sugar, which are dipped in the cold liquid, and eaten before they melt. There the pretty *Malagueñas* appear to the greatest advantage, and prove their right to that character for beauty which is assigned to them preeminently among the fair ones of Spain. It were no easy task to describe their light and graceful carriage, and the pleas-

(most unjustly it would seem) of being in collusion with the Carlists. The rebels, not finding him at home, surrounded a dwelling where he had taken refuge; they dispersed the guards, dismissed them to the castle, and detecting the Governor, who sought to escape under the disguise of a soldier, raised the cry of "Here's the man we want!" and immediately hacked him to pieces: thence these ruffians hurried to the Hotel de Ville, where the military chief advanced courageously to meet them, pointing to the wounds he had recently received in the northern provinces while defending the Liberal cause; and they actually replied by falling upon him with their bayonets! When General Quiroga at last arrived from Grenada, and quelled the insurrection, he dared not make a proper example of the wretches who had committed these atrocities: but simply banished some of the most guilty to the Canary Islands, whence they were presently recalled by the Radical ministry, which succeeded; and now they walk boldly and openly in the streets of Malaga! There is probably not a city in Spain where the populace so much require to be treated alike with justice and inflexible severity. The Liberal party is very strong, but ignorant, and addicted to disturbance. A certain African ferocity of disposition exists amongst the lower classes, and is sure to break forth on such commotions, manifesting itself too on many trivial occasions. The dagger generally ends a quarrel, and the very children exhibit the same Moorish temperament. Outside the gates of Malaga there is a dry water-course, called *Guadalmedina*, the theatre of many sanguinary juvenile encounters, and which I never passed without seeing these youthful worthies engaged in stone battles, and often wounding the passers-by, without the police once offering to repress this undesirable propensity.

The first few days after my arrival were taken up by a troublesome, though not very important piece of business, to which I shall allude for the benefit of those Botanists who may hereafter visit Spain. I had brought with me from France a stock of plant-paper, of a quality which is not procurable, and is even prohibited, in this country. It would have been an easy matter enough to smuggle it into Malaga; and I might have been warned to do so, by all the plague this paper had already caused me at Valence. But I was so foolishly honest as to exhibit it at the custom-house, feeling sure that the letters I was carrying to all the chief authorities in the city must needs remove every difficulty. I however found that I was in the hands of a host of officials, who had no greater delight than to annoy a stranger, headed by an old rogue of an *Administrador*, who, anticipating but little profit on the occasion, was pleased to entrench himself in high formality and unimpeachable character! Applications, backed by the *Gefe Politico*, attestations and representations, were alike ineffectual. After scrawling and signing sheet after sheet of stamped paper, I had no resource but to leave the unlucky subject of litigation in their hands, and finally received it five months after, exactly when I was leaving Spain; thanks to my petition having been transmitted to Madrid. Very fortunately, I found that the common Spanish paper might be made to serve my purpose, though it is so small that every sheet required to be opened out before I could lay my specimen upon it.

Being very eager to obtain every information, and to see of a Botanist renewed all his early ardour; and I cannot be too grateful for the valuable information which his perfect knowledge of the country enabled him to give me, and for the zeal with which he laboured to collect such materials as might render my work complete. A herbarium formed by him several years ago was exceedingly useful to me, and it is from that collection that I cite many of the species growing in the environs of Malaga, and which I was not myself so fortunate as to find.

I may be allowed, too, to mention my obligations to another resident in Malaga, Don Pablo Prolongo, a young gentleman of great intelligence and information, who took a most hearty interest in my pursuits, and materially aided my researches, both during my journey and after my return.

Sometimes alone, and sometimes accompanied by one or both of these friends, the first fortnight of May found me constantly engaged in short excursions through the environs of the city. All the country is a vast garden at this season, and not a spot can be seen, even in the *Arroyos*, which is not adorned with the silvery tufts of *Paronychia argentea* and *nivea*, mingled with *Astragalus hypoglottis*, *Leobordea*, *Andryale Ragusina*, *Scrophularia canina*, and the elegant purple-flowered *Cleome violacea*. The fields and cultivated lands exhibit a still more varied vegetation. There we may observe, amid abundance of *Fumaria*, *Medicago* and *Scorpiurus*, the *Garidium Nigellastrum*, *Salvia viridis*, *Amberboa muricata*, and *Picridium Tingitanum*, growing along with many other plants, which we cultivate to adorn our flower-beds, as *Anthemis Arabica* and *Chrysanthemum coronarium*. The banks of the little streams, and similar damp spots, are covered with other species, *Linum angustifolium*, *Cyperus junciformis*, *Silene muscipula*, *Lythrum Græfferi*, and that plant *Samolus Valerandi*, which may be found in almost every part of our world.

Very near the city, and on the sea-shore, stretches for three miles and more, up to the mouth of the Guadalhora, a great uncultivated plain; it is called the *Dehesilla*. On its shifting sands I gathered several pretty plants, the *Erodium hirtum*, *Linaria pedunculata*, *Lotus aurantiacus*, *Plantago albicans*, and *Delphinium peregrinum*. The *Ononis ramosissima* grew in great abundance, and here and there I saw the magnificent *Orobanche fœtida* parasitic on its roots. A delicate grass, *Festuca Alopecuros*, seemed to be used as corn by large families of ants, for I observed them collecting its seeds in their nests in the sand, and prudently leaving behind the covering which surrounds the seeds.

Among those plants which prevail in the low and cultivated parts of the country, the most characteristic, and those that by their size and abundance give the chief features to the vegetation, are *Agave Americana*, the *Prickly Pear*, the *Ricinus* or *Palma Christi*, and *Arundo Donax*; also two *Labiatæ*, *Phlomis purpurea*, and *Ballota hirsuta*; and lastly a gigantic *Thistle*, producing yellow flowers and herbaceous stems, and growing from five to ten feet high, *Kentrophyllum arborescens*. These plants may be found everywhere, in all the fallow spots and in the hedges and waysides.

The vegetation of the hills presents a different aspect still; a few of the above species may be seen, but much more of *Thymus capitatus*, *Lavandula multifida*, *Genista umbellata*, several kinds of *Cistus*, and particularly the picturesque *Pal-*

topped here and there with calcareous rocks. I paid many visits to this locality, and found it rich in plants despite its arid aspect. Among hundreds of other productions, I gathered *Asperula hirsuta*, *Helianthemum marifolium*, *Convolvulus linearis*, and *saxitilis*. From the clefts of the rocks sprung *Campanula velutina*, with downy foliage, *Dianthus serrulatus*, *Hyacinthus serotinus*, *Polygala saxatilis*, and a fine yellow-flowered *umbelliferous* plant, *Elæoselinum Lagascæ*; and finally, at an elevation of 500 feet, I began to find *Putoria Calabrica*, very common throughout the mountainous region of Andalusia, and which clothes the shelves of the rocks with a close carpet of elegant pink and white blossoms, shaped like those of jessamine. From these heights a noble view is obtained over the Valley of Guadalmedina, dotted with the country-houses of the citizens, and also of Malaga itself, stretching along the sea-shore, and surmounted with its gigantic cathedral.

Another and still more interesting excursion, which I accomplished several times, was to the Cerro or Peak of St. Anthony. This mountain, about 1500 feet high, is surrounded by a rifted and conical rock, and forms one of the culminating points in the chain of hills which fringe the coast between Malaga and Velez. To reach it, an hour's walk is required first in the direction of the latter town; and shortly before coming to the village *Del Palo*, the traveller turns to the left, along the bed of an *Arroyo*, which soon opens into a delightful valley, enclosed between mountains, where the Botanist may reap a rich harvest. Among the plants that rejoice in the moisture and coolness of the little brook, and grow there with peculiar vigour, *Anthyllis cytisoides*, *Genista umbellata* and *sphærocarpos*, divide the soil with three species of *Cistus*, viz. *Monspeliensis*, *albidus* and *crispus*, the latter display unnumbered hybrid varieties, and open their lovely crumpled petals in the early hours of every morning. *Aristolochia Boetica*, *Ruscus*, and other twining plants climb over the bushes of *Prickly Pear* and *Evergreen Rose*, and form an impenetrable thicket. At the very brink of the stream I noticed the rare *Poterium agrimoniifolium*, and some tufts of *Ononis speciosa*, the finest individual of the genus, and which had probably been brought down with the rivulet from the heights of Colmenar, its almost exclusive place of growth. Pursuing the ascent, about half-way up, a kind of natural terrace is formed among the steep slopes, and here are two farms surrounded with gardens, planted with *Orange* and *Lemon Trees*, a smiling oasis amid the barren rocks. In my excursions I often rested at one or other of these farms, and was always received with kindness by the worthy inhabitants, who regarded me as a friend after my second or third visit, and showed me that frank hospitality which is almost peculiar to the *Labradores* of Spain. I shall never forget the rustic courtyard, the springs gushing from a fern-clad rock, and the lovely peeps of country view, which were seen through the trees. Between this place and the summit, there are steep ascents and rocky shelves, covered with *Chamærops*, *Ephedra distachya*, *Rhamnus lycioides*, *Cytisus Malacitanus*, *Olea Oleaster*, *Quercus coccifera*, and *Cistus Clusii*. Amid this vegetation a few plants occur, indicative of a subalpine region, *Phlomis lycioides*, *Biscutella saxatilis var. angustifolia*, *Leuzea conifera*, *Serratula flavescens*, and *Sideritis linearifolia*. Everywhere grows the useful *Sparteria* such as *Arenaria montana*, *Helianthemum origanifolium*, and the elegant *Iris fugax*, whose petals shrivel up with extraordinary rapidity. Thick tufts of *Silene velutina*, having a woody and twisted rhizoma, adorn the perpendicular and inaccessible faces of the rocks, at the foot of which I gathered a scarce and new species of *Fumaria*, *F. macrosepala*; I also noticed plenty of *Cytinus hypocistis*, a singular parasite, growing upon the roots of several kinds of *Cistus*.

And now, after having given a general idea of the indigenous vegetation of the environs of Malaga, it may be well to say a few words about the interesting plants which are cultivated there. In this clime, where frost and snow are nearly unknown, most of the tropical productions would succeed admirably; and the very few which have been already introduced, are enough to show what may be done when a greater taste for flowers and horticulture shall prevail in the country.

The plants in most general cultivation for adorning the balconies and terraces (or *Azoteas*), are *Phaseolus Caracalla*, and *Hoya carnosa*; they bear the winter perfectly well, as do some *parasitical Orchideæ*, brought to Cadiz, and often seen growing suspended from the trellisses and gratings of the windows; they are called *air-flowers*. In the gardens thrive the *Schinus Molle*, *Mimosa Farnesiana*, *Datura fastuosa*, and several kinds of *Lantana* and *Jasmine*. I much admired, in an enclosure near Guadalmedina, a *Dracæna Draco*, upwards of twenty feet high, and a group of magnificent *Bananas* which could not be excelled by any in their native country. The people called them *Platanos*, and assured me that their fruit ripens yearly. A much commoner tree is the *Chirimoya*, or *Anona squamosa*; it is raised in many gardens, both at Malaga and Churriana, whence its delicious fruit is sent, as a rarity, to the interior of Spain, and even to France. A lack of water for irrigation must ever forbid the profitable culture of the *Sugar-cane*, in the environs of Malaga; but this district possesses, in amends, a peculiar growth, that of the *Sweet Potato* (*Convolvulus Ba-*

tatas). These tubers are exported in great quantities and of excellent quality, and called *Malaga Sweet Potatos* (*Patatas dulces de Malaga*. There is also a commencement made towards the production of *Cochineal* in a few gardens, planted on purpose with several kinds of *Cactus*, allied to *Opuntia*, and I noticed the same branch of industry pursued at Valence and already yielding an ample return.

To be continued.

Observations on a New Genus of Ferns; *by* J. Smith.

With a Plate, Tab. VII, VIII.

On referring to the enumeration of the Ferns collected by Mr. H. Cuming in the Philippine Islands, published in the third volume of the Journal of Botany, it will be there seen that I have placed six species under the genus *Callipteris*; but at page 178 of the fourth volume of the same journal I have, for reasons there stated, removed four of them from *Callipteris*, and arranged them in the genus *Oxygonium*, believing one of them (*Cuming, n.* 116) to be the *Diplazium alismæfolium* first described and figured by Presl, in *Reliquiæ Haenkeanæ*; and which that author afterwards, in his the often fugacious nature of that organ, and judging from analogy and habit, I was led to the conclusion that the sori were furnished with indusia, and that it was an undescribed species of *Oxygonium*. I had no reason to doubt this view being a correct one, till lately, when my attention was again directed to this genus, by having received perfect specimens of a fern from Singapore, gathered by Mr. T. Lobb, which I at first took to be *Oxygonium alismæfolium* of Presl; but, on examination, I was surprised to find the sori destitute of an indusium, the sporangia quite compact and occupying the sides and centre of the receptacle (or venule), forming perfect and truly naked linear sori, presenting much similitude to the naked sori of *Gymnogramma Javanica* and *serrulata*. On further examination, I found these specimens to agree with an authentic specimen (lately come into my possession) of *Diplazium alismæfolium*, which specimen, although old and with but imperfect remains of sori, it is evident, from the nature of the sporangiferous receptacle, never had an indusium. From this circumstance, I cannot but conclude that Presl must have confounded two distinct, but yet very similar species, under the name of *Diplazium alismæfolium*; one with the sori furnished with indusia, as figured at tab. 8 in *Reliquiæ Haenkeanæ* (which, as I have already noticed, is probably the same as my *Oxygonium alismæfolium*, Cuming's specimens, n. 114); the other, with naked sori, which he (Presl) might have considered to be the same as the first, but in an imperfect state of fructification, his own specimen, lying before me, being an example. That specimen, however, is now proved by my Singapore plant, not to belong to the tribe *Asplenieæ*. On this discovery I was led again to examine my *Oxygonium vittæforme*, and I find that I was wrong in considering it an indusiate fern, the soriferous receptacle being of the same nature as in *Gymnogramma*, and only specifically different from Presl's and my Singapore specimens. It therefore becomes evident, that these two species must be excluded from *Oxygonium*, and placed near

Gymnogramma in the tribe *Polypodieæ*. I therefore propose to associate with them another undescribed *Asplenium*-like fern from the island of Jobia, and to form of them the following genus, *Syngramma*, which will bear the same relation to *Gymnogramma*, that *Oxygonium* does to *Diplazium*. Seeing, therefore, that it differs from *Gymnogramma*, only by the anastomosing venation, it will, on that account, come under the second section of the tribe *Polypodieæ*, and immediately before *Stenosemia*.

SYNGRAMMA, *J. Sm.*

Veins forked; *venules* usually direct and parallel till near the margin, then anastomosing, forming one or more marginal areoles. *Sporangia* medial. *Sori* linear, oblique, simple, forked or unequally reticulated, destitute of an indusium.

Fronds 1 *to* 2 *feet in length, rising from a cæspitose or short creeping* rhizoma, *smooth, simple and entire or pinnate,* pinnæ *entire* 6—8 *inches long.*

1. Syngramma *vittæformis*; fronds simple membranaceous slightly undulate, the sterile ones oblong-lanceolate, the fertile linear-lanceolate, (much larger than the sterile), both attenuated downwards, the sporangia occupying the whole

lanceolate, obliquely cuneate at the base, margins cartilaginous and slightly undulate, sori somewhat reticulated usually interrupted. (TAB. VII, VIII. C.)

HAB. Island of Jobia, *Barclay*, 1839.

OBS. On account of the pinnæ of this species being narrower than the simple fronds of the two first species, the venules are consequently shorter and therefore anastomose sooner, exhibiting a more uniform reticulated character: in that respect possessing some of the reticulated venation and sori of *Hemionitis*; but in other particulars it bears no affinity to that genus.

On several MOSSES, *new to the British Flora. By* RICHARD SPRUCE, F.B.S.

The mosses described in this and the following pages, for the first time as British, comprise the whole of my additions to the Bryology of Great Britain (with the exception of those included in my paper on the "*Musci* and *Hepaticæ* of Teesdale," in the 2nd volume of the Transactions of the Botanical Society), together with five species and one variety discovered by my excellent friend, Mr. Borrer, and now published with his kind permission. Of the twenty-one species detected by our joint researches, four have never before been described; those which have been figured in the "*Bryologia Europæa*" have all been authenticated by comparison with specimens from the learned authors of that work; and the remaining species have been ascertained by means of examples received from Messrs. Bruch, Wilson, Taylor and Montagne, and in most cases confirmed by the personal examination of those distinguished cryptogamists themselves.

1. Bryum *erythrocarpon*, Schwaegr.: "dioicum; caule humili, innovando ramoso; foliis erecto-patentibus vel patulis, lanceolatis, cuspidatis, apice dentato-serratis subintegrisve, costa ultra apicem producta, cum vel sub eo desinente, margine revoluto-retroflexis; capsula oblongo-

pyriformi, brevicolla, inclinata vel pendula, operculo magno mammillari, purpurascente instructa, annulo magno."—*Bryol. Europ.*

"Br. erythrocarpon, *Schwgr. Suppl.* I, 2, p. 100, t. 70; Br. sanguineum, *Brid. Bryol. univ.* I, p. 671." (*fide Bruch et Schimper.*)

HAB. In moist sandy stubbles, between Barmby and Woodhouse-Moors, near Pocklington, Yorkshire. Stockton Forest, with *Br. annotinum.*

I have never had any difficulty in distinguishing this species from *Br. cæspiticium* by the *narrower, serrate leaves, and their scarcely excurrent* (sometimes not percurrent) *nerve.* On Barmby Moor the plants are closely tufted and send forth slender innovations about half an inch long, the leaves of which are smaller and proportionally broader than the stem-leaves, but all decidedly serrate upwards. Where the plants grow scattered, the leaves are longer, loosely set and spreading. Capsule pyriform, elongate; when mature, of a scarlet hue.

The only moss with which *Br. erythrocarpon* can be confounded, is a large variety of *Br. atropurpureum*, W. and M., which has been found near Tonbridge Wells by Mr. Jenner, and near Bristol by Mr. Thwaites. The latter may, how-

ovato-acuminatis, superioribus ovato-lanceolatis, concavis, margine revolutis, integerrimis, costa cum vel sub apice evanida instructis, perichætialibus angustioribus; capsula nutante vel pendula, pyriformi, annulata; operculo parvulo, convexo, apiculato; peristomio interno ciliis rudimentariis seu nullis."—*Bryol. Eur.*

"Bryum lacustre *Brid. Mant. Musc.* p. 120; Br. cernuum *Brid. Bryol. univ. Suppl.* p. 857; Mnium lacustre, *Bland. Musc. exsicc.*—*Schwaegr. Suppl.* I, P. II, p. 135, Tab. 79.—*Röhl, Deutsch. Flora,* III, p. 96; Hypnum lacustre, *Web. et Mohr, Bot. Taschb.*, p. 285; Pohlia lacustris, *Hübener Musc. Germ.* p. 483 (nec *Schwaegr. sp. Musc.*); Bryum cæspiticium var. *Musc. Brit.* 201.—Walker—Arnott, *Disp. Meth.* 46." (*fide B. et S.*)

HAB. "Gathered at Ealing, forty years ago, by Mr. Eagle." *Borrer in litt.*, Apr. 1844.

I have compared this moss (which was given to Mr. Borrer by Mr. Eagle without name) with specimens of *Bryum lacustre* (Bryol. Eur.) from M. Bruch, and find them to correspond exactly, except in the smaller size and the somewhat broader and firmer leaves.

Stems not exceeding three or four lines in length, slightly branched, reddish, and as well as the branches, leafless towards their base, but densely radiculose. Leaves patent (on the innovations erecto-patent), yellowish-green, not closely imbricated, ovate, apiculate or acuminulate, very concave, keeled, recurved at the margins; the perichætial leaves ovato-rotund; *all* widely areolate (not margined with two or three rows of narrow cellules as in *Br. cernuum* and *inclinatum*), nerved nearly (more rarely quite) to the summit. Inflorescence hermaphrodite; antheridia numerous. Vaginula small. Seta very long in proportion to the size of the capsule. Capsule pendulous, pyriform, widely areolated, often abortive (as remarked also by B. and S.) Annulus broad. Peristome short; the inner very fragile, partially glued to the outer, pohlioid, the processes perforated. Lid conical. Spores large, slightly exceeding those of *Br. cernuum,* B. and S.

3. Bryum *torquescens*, B. et S. " Hermaphroditum, dense cæspitosum ; caule ramoso, ramuloso, toto radiculoso ; foliis inferioribus ovato-lanceolatis, cuspidatis ; superioribus ovatis, cuspidatis, caulinis haud longioribus ; omnibus integerrimis, margine reflexis, costa percurrente instructis, siccitate tortilibus ; capsule obconica, magna, inclinata, operculo convexo, acuminulato."—*Bryol. Eur.*

HAB. " Among *Bryum nutans* on a small rock on the shore of Gormire Lake, near Thirsk, Yorkshire."—*Mr. Borrer.*

This species may be distinguished from *Br. capillare* Hedw. and *Br. obconicum* B. and S. by the *hermaphrodite inflorescence* (the fertile flowers including numerous antheridia), the incurved capsule and the *narrower leaves.* From the former it differs also in the *clavate capsule* and the longer apiculate lid, and from the latter in *the leaves being much twisted when dry.* Mr. Borrer's specimens differ from Sardinian ones, given me by M. Bruch, in being smaller and more delicate, the leaves obovato-lanceolate, and the capsule paler. It is perhaps the same form as that mentioned by B. and S. from New Holland, " où. . . .il est plus tendre, à capsule plus pâle et munie d'opercule plus pointu."

4. Bryum *uliginosum*, B. et. S. " Monoicum, cæspitosum ; caule brevi, radiculoso, innovationibus brevibus ramoso ;

ton, near Manchester, growing with *Br. pallens*;"* *Dr. J. B. Wood and Mr. Buxton.* "In one of the highest branches of the Wythburn Beck, near the junction of Cumberland and Westmoreland;" *Mr. Borrer.*

This is most nearly allied to *Br. pallens*, Swartz, (Br. turbinatum, *Musc. Brit.*), but may be distinguished by the following characters.

Leaves much larger, more erect, proportionally narrower and tapering more towards the point, very distinctly marginated, the upper of a bluish-green hue, those towards the base gradually assuming a tinge of red, especially on the nerve; but the redness of the foliage in *Br. pallens* is quite characteristic of the species. Inflorescence monoicous, (dioicous in *Br. pallens*); male flowers much smaller and containing fewer antheridia, the outer perigonial leaves not recurved. Capsules usually larger, irregular, the sporangium proportionally not so wide, and the collum quite equalling it in length; the mouth in *Br. pallens* is oblique, but less so than in *Br. uliginosum*, which resembles in this respect *Br. Zierii* and *demissum*. Operculum distinctly apiculate. Teeth of outer peristome acuminate. Inner peristome destitute of cilia or with merely rudimentary ones; that of *Br. pallens normally* ciliate, yet not uniformly so.†

The capsules of *Br. uliginosum* vary in direction from horizontal to pendulous; in Mr. Ibbotson's specimens they are quite pendulous, regular, and the mouth is scarcely oblique. When just mature they are usually of a milk-white hue; but in my Castle-Howard specimens, which grew exposed to the dripping of water, they are deep brown on the upper, and greenish on the under surface.

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* The *Bryum turbinatum* of Hobson's British Mosses is a mixture of *Br. uliginosum* and *pallens* from this locality.

† Instances have been found by Mr. Wilson among Dr. Wood's Pilkington specimens of *Br. pallens*, of capsules whose inner peristome is furnished with merely rudimentary cilia, and I have myself gathered a var. on Stockton Forest, in which they are entirely wanting.

Bryum uliginosum also approaches closely to *Br. inclinatum*; but as B. and S. remark: "Notre plante se distingue également bien du *Br. inclinatum* par la couleur pâle de sa capsule, par le dos bombé de cette dernière, et enfin par les dents fortement infléchies par la dessication, laissant sortir dans leurs interstices les *processus redressés.*"

5. Hypnum *elodes*, nov. sp.; caule tenui, ramoso, ramis pinnatis; foliis laxe imbricatis, caulinis patulis, lanceolatis, longe acuminatis, ramulinis erecto-patulis vel subsecundis, subulatis; omnibus integerrimis, nervo perdurante.

Hab. In wet places on Stockton Forest, near York; growing with *H. scorpioides* and *lycopodioides*, Schw. (*H. aduncum, var.*); Aug. 1842.

Stems about 3 inches long, procumbent or (where closely tufted) erect, irregularly branched, the branches pinnate. Leaves brownish, the terminal ones assuming a tinge of green, loosely set; the cauline ones patent, narrow-ovato-lanceolate with a long acumination and a slightly excurrent nerve; those of the branches erecto-patent, very straight, (except the upper ones which are subsecund, especially when dry), subulate or even subulato-setaceous, nerved to the point; all entire.

Although I have not met with the fruit of this Hypnum, absence of radicles on the stem; while the striated leaves of *H. fluviatile*, their looser texture and far stouter nerve, afford characters sufficiently distinctive.

6. Hypnum *polymorphum*, Hedw. "Trunco tenui, bifariam ramificato; ramis subsimplicibus; foliis eductulosis, ex ovato longe acuminatis, semper patentibus variæ directionis, sporangiis cernuis, operculo conico." *Spec. Musc.* p. 259, t. 66.

H. stellatum, var. γ, *Bridel Bryol. univ.* p. 602. H. Sommerfeltii, *Myrin in Herb. Hook.* (*fide Wilson*).

Hab. On wet limestone at Crambeck, and on the ruins of Kirkham Abbey, in the Vale of the Yorkshire Derwent; the fruit mature in May.

That the *Hypnum polymorphum* of the "Muscologia Britannica" is distinct from the species of Hedwig (which is figured and described with a nerveless leaf) has always been maintained by continental botanists, and Bridel in the "Bryologia Universalis" has referred it to his *H. chrysophyllum*. To me it appears a mere variety of *H. stellatum*, as indeed Hooker long ago suspected (see "Eng. Flora," vol. V, part I, p. 90). In a specimen of *H. stellatum* given me by Mr. Borrer from Schimper's "Bryologiæ Europææ Stirpes Normales," I find *nerved and nerveless leaves even on the same branch*; and in Ascham Bogs, near York, the large form of that species frequently shows leaves nerved almost quite to the summit. Besides, in undoubted examples of H. *polymorphum*, H. and T., *the nerve is sometimes short and forked, and not seldom altogether wanting*; and Dr. Taylor has remarked to me, "I find a specimen sent to me of H. *chrysophyllum* by Kunze (a most accurate muscologist) to have leaves intermediate, especially as to the nerve, between H. *stellatum* and H. *polymorphum*." Now as no other character has ever been insisted on for the separation of these two than the nerved leaves of the latter and the nerveless ones of the former, and experience has amply shown the invalidity of this difference, I feel quite justified in considering them forms of the same species.

The *true* H. *polymorphum*, Hedw., as represented by the specimens of M. Bruch, is a small species with the habit of H. *serpens* (as remarked by Hedwig himself), and distinguished from H. *stellatum* by good though minute characters. It is stated to be rare on the continent, and I have not seen it from any British stations, except those above-mentioned. The following is the result of my observations upon it.

Stems prostrate, much branched and intricate. Leaves squarroso-patent, the upper often subsecund, slightly twisted in drying, pale green or brownish, tapering into a long acumination from an ovate base, entire, nerveless, the *margins incurved* from a little above the base to near the summit, so as to cause the leaves to appear channeled; they taper to a longer point than in H. *stellatum*, and the incurvation of the margins makes them appear much more suddenly acuminate; the reticulation very nearly as wide as in that species, but the cellules shorter. *Inflorescence monoicous;* male flowers gemmiform, *seated at the base of the fertile flower*, and also (though more rarely) here and there along the stem; the inner perigonial leaves minute, broadly lanceolate, and including few antheridia. (The inflorescence of H. *stellatum* and var. *chrysophyllum* is dioicous). Female flower: perichætial leaves subdenticulate, scarcely plicate (strongly so in H. *stel-*

however, all the specimens I have seen under that name belong truly to H. *stellatum*.

Mr. Wilson, to whom I am indebted for the synonym of Myrin, and who thinks he has found "H. *Sommerfeltii* somewhere in Wales," observes "the Yorkshire *Hypnum Sommerfeltii* does not exactly correspond with Myrin's original specimen, which has the leaves more decidedly patulo-recurved, but on the whole I am inclined to think them only states of one species."

7. Hypnum *pratense*, Koch, caule subramoso; foliis laxe imbricatis, secundis, deltoideo-lanceolatis, subacuminatis, integerrimis, enerviis; capsula cernua, oblonga; operculo conico.

H. amœnum, *Drummond's Musci Americani*, No. 196, (*nec Hedwig*).

HAB. "Road-sides, among thin grass, near Capel, Surrey, and Henfield and Shindon, Sussex; without fruit;" *Mr. Borrer*, who adds, "I sent this moss when I first found it, nearly forty years ago, to Dawson Turner, whose note on it, preserved in my collection, is: 'I have no moss like this in my herbarium, nor do I find any description of it. Its characters are few and plain.

"'Caule indiviso, ramo uno alterove brevi erecto; foliis circinalibus deltoideo-acuminatis striatis enerviis.'

"Hooker also thought it new.—Arnott (without examination perhaps) thought it H. *aduncum*.—Wilson has called it a var. of H. *cupressiforme*, and remarked: 'It is, I believe, the same as H. *amœnum* of Drummond's *Musci Americani*, No. 196, but certainly not H. *amœnum*, Hedw. *Sp. Musc.* t. 77, which represents a much smaller moss with decidedly falcate leaves, and very like H. *incurvatum*.'"

By means of specimens received from M. Bruch, I have been enabled to identify Mr. Borrer's moss with *Hypnum pratense*, Koch, and to decide that it is truly distinct from H. *cupressiforme*, as will be seen by the following diagnosis.

Plants resembling H. *aduncum* in habit, and often presenting the brownish hue usual in that species. *Stems very spar-*

ingly branched, and by no means pinnate. *Leaves almost triangular* in outline, scarcely acuminate, *more laxly placed and less falcato-secund* than in H. *cupressiforme. Capsule oblong, cernuous* (that of H. *cupressiforme* cylindraceous, erecto-cernuous). *Lid conical* (not rostrate). Annulus broad. Teeth of outer peristome not marked with a medial line. Inner peristome more widely areolate, and with shorter cilia.

8. Leskea *pulvinata,* Wahl. "Surculis procumbentibus subcapillaceis, ramis adscendentibus, foliis ovatis acutis (sub) enervibus, capsulis oblongis cernuis."—*Flora Lapponica,* p. 369.

L. subenervis, *Schwaegr. Suppl. Prim., Sect. posterior,* p. 176, Tab. LXXXV. *(fide Wilson et Taylor).*

HAB. On trees and shrubs in situations exposed to inundations from the Ouse, in the neighbourhood of York, where I first observed it on the 30th of October, 1841. On willows by the Cock, near Tadcaster, sparingly. "On willows by the Mersey, near Withington, four miles from Manchester, April 16th, 1843;" *Mr. Nowell and Dr. J. B. Wood.*

From the circumstance of this species always growing along with L. *polycarpa,* Hedw. (H. medium, *Dicks.*), and bearing considerable external resemblance to it, both Dr. Taylor and with ascending sub-parallel branches; shoots incrassated towards the extremity.

Leaves of a fine lively green, imbricated, *ovate*, concave, patent, their apices pointing upward, appressed when dry, with a tendency to become secund,* *widely areolate, the margins plane*; *nerve faint, seldom reaching the middle of the leaf*, often forked and occasionally altogether wanting.†

In *L. polycarpa* the leaves are lurid green or brownish (rarely of a full green colour), opaque, more loosely set, ovato-acuminate, but subobtuse at the summit, their apices pointing outwards or to one side, keeled with the strong nerve, which either reaches quite to the point or vanishes just below it; the margins strongly reflexed; the areolation obscure, the cellules being scarcely half the size of those in L. *pulvinata*.

Inflorescence monoicous. Male flowers numerous, axillary, gemmiform. Female flowers: outer perichætial leaves ovate shortly acuminate, inner oblong-lanceolate; all nerveless and diaphanous.

In L. *polycarpa* the male flowers are fewer, proportionally much smaller, and include fewer antheridia. The outer perichætial leaves are ovato-lanceolate, tapering to a narrow point, the inner lanceolato-subulate and plicato-striate; all nerved nearly quite to the summit.

Capsule olive-coloured when mature, after the emission of the seeds reddish-brown, scarcely inclined, *elliptic-oblong*,‡ *tapering gradually into the pedicel* (spuriously apophysate), and also narrowed at its junction with the lid. Seeds green. Seta smooth erect. Vaginula oblong.

In L. *polycarpa* the mature capsule is greyish, erecto-arcuate, subcylindrical, more slender and usually much longer than that of L. *pulvinata,* not tapering into the pedicel. Seeds yellowish, only half the diameter of those of the other. Seta longer.

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* This is peculiarly apparent in Wahlenberg's specimens; yet he says "foliis siccitate adpressis, nec subsecundis."

† Perhaps it would be more correct to say with Wahlenberg "foliis nervo orbatis;" for although the so-called nerve is quite as apparent in his own specimens as in mine, it consists merely of one or two rows of cellules narrower than the rest, *and not of any absolute thickening of the leaf.*

‡ So Wahl. "Capsulis oblongis, nec subcylindricis."

Peristome delicate and fugacious: outer teeth equal to the inner, marked with 16-19 trabeculæ; *inner peristome reddish, the processes slender* (only one third the breadth of the intermediate spaces) obscurely marked with a medial line, united into a narrow basal membrane, *through which the medial line is distinctly produced. Annulus none.*

In L. *polycarpa* the teeth are more numerously trabeculate, and traversed by a medial line; the processes of the inner peristome are pale-coloured, firmer and broader than in L. *pulvinata* (very nearly as broad as the intermediate spaces) marked with a very distinct medial line, not unfrequently with rudimentary cilia between them; the membrane into which they are united twice as broad as that of L. *pulvinata* and more widely areolated; central line of the processes not continued down into the membrane. (In L. *polycarpa* the *outer* peristome is most fugacious, in L. *pulvinata* the *inner*: it is very common to find empty capsules of the former with the outer peristome fallen away, while the inner remains quite perfect.)* Annulus present, consisting of a single series of cellules.

siccitate erecto-patulis, anguste-ovatis, acuminatis, enervibus, sparsim denticulatis, perichætialibus spinuloso-serratis; seta levi; capsula parva, ovali, suberecta; operculo conico, obtuso.

Hypnum confervoides *Drummond's Musci Americani*, No. 190; (*nec Bridel*).

Hab. Growing intermixed with *Jungermannia trichophylla* on basaltic rocks in a shaded situation by the Tees' side below Winch Bridge. I observed only a single patch, destitute of capsules, but possessing perichætia.

Guided by the authority of Drummond's Musci Americani, I published this moss in my "Musci and Hepaticæ of Teesdale" as *Hypnum confervoides*, Brid., not, however, without adding a mark of doubt, for I perceived that it differed in some points from the character given by Schwaegrichen. I have since received from Dr. Montagne and Mr. Borrer (ex Schimper) specimens of the *true* H. *confervoides*, which enable me to decide that my moss is a very distinct (though allied) species. M. Bruch, in the London Journal of Botany, has referred Drummond's moss to *Leskea subtilis*, Hedw., and a similar opinion was formerly entertained by Dr. Taylor; but both these distinguished Cryptogamists now declare themselves convinced of its being a new and undescribed species. The former has observed to me, "entre *Hypn. confervoides*, *Leskea subtilis* et votre *Leskea* il y a une telle affinité dans le habitus, la forme et le tissu réticulaire des feuilles et dans l'inflorescence, qu'elles doivent être placées dans une disposition naturelle à la même section. C'est pourquoi je proposerais, pour éviter de l'erreur, de changer le nom et de donner à cette belle espèce celui de *Leskea Sprucii*." I am happy to add also the testimony of two such able botanists as Mr. Wilson and Dr. Montagne, who have from the first maintained the same opinion respecting this moss as myself.

Leskea Sprucii differs from L. *subtilis* in being still smaller and more delicate; *the stems erect and very sparingly branched* (but in L. *subtilis* procumbent and much branched); the leaves smaller and paler, and not running out to quite so long a point, *unchanged in direction when dry* (but in L. *subtilis* closely appressed and subsecund), sparingly and minutely denticulate at the margins, more rarely entire: *those of the perichætium remarkably serrate*, but entire in L. *subtilis*; the capsule slightly inclined, shorter than that of L. *subtilis*, when dry contracted from below the mouth, assuming the form of a cornucopiæ; operculum shorter and not apiculate; inner peristome excessively fragile, with or without rudimentary cilia.

Leskea confervoides (Hypnum confervoides, *Brid.*; H. Conferva, *Schwgr.*) is to be distinguished from L. *Sprucii* by the *prostrate pinnatedly-branched stems*, often denuded below; the leaves more spreading and with a tendency to become secund, appressed when dry; *those of the perichætium entire*; the stouter pedicel; *the much larger capsule*, of a darker hue, oblong and *cernuous*; the operculum much larger and *terminating in an apiculus* which equals one-third of the whole; the teeth of the outer peristome marked with a medial line; the inner peristome firmer and the cilia perfect. The inflorescence of all three species is monoicous, and in L. *Sprucii* the female flowers are remarkably numerous.

10. Mnium *stellare*, Hedw., "dioicum; surculis omnibus

"Dennant, near Castle Conway; June, 1844;" Mr. Wilson. "Todmorden;" Mr. Nowell; "Teesdale;" Mr. Ibbotson. It is very probable that this species has often been passed over for *Mn. hornum* or *serratum* (Bryum marginatum, *Dicks*), between which it is intermediate in size and appearance. It may, however, be distinguished from these, and from every other known species, *by the leaves being distinctly serrated and at the same time destitute of thickened margins.* During the process of drying it often assumes a bluish tinge, which in old specimens passed off into yellowish-brown. On slender innovations the leaves are bifariously arranged.

11. Orthotrichum *coarctatum*, Pal. Beauv., "monoicum, pulvinatum; caule erecto vel basi decumbente, ramoso, foliis patulis, siccitate crispatis, lineari-lanceolatis, costato-carinatis, margine subplanis; capsula alte exserta, ovali-oblonga, 8 striata, siccitate ore coarctata 8 costata; calyptra conico-campanulata, pilosissima, margine laciniata; ciliis rarissime 16." *Bryol. Eur.*

"O. coarctatum, *Pal. Beauv. prodr.* p. 80. *Schwaegr. Suppl.* I, P. 2, p. 26, T. 52; *Brid. Bryol. univ.* I, p. 288; *Hook. et Grev. Journ. of Sc.* 1824, p. 125; Ulota Bruchii, *Brid. Briol. univ.* I, p. 794;" (*fide B. et S.*)

HAB. Frequent on trees in the Castle-Howard Woods.

This may be distinguished at sight from O. *crispum by the leaves being much less crisped when dry*; they are besides narrower and more widely areolate. Vaginula larger, usually more hairy. Pedicel longer. *Capsule larger, less clavate,* more widely areolate, *the striæ narrower and deeper-coloured.* Operculum larger, and mostly tapering more suddenly from a shorter base, yet certainly variable in this respect. *Cilia filiform,* from an expanded base, (in O. *crispum,* subulate, broad, and composed of two rows of cellules).

12. Orthotrichum *fastigiatum,* Bruch. in Brid., "monoicum, subpulvinatum; caule ramoso, ramis fastigiatis; foliis erecto-patentibus, patulisve, siccitate imbricatis, ovato-lanceolatis, costato-carinatis; capsula pyriformi-oblonga,

longicolla, late striata; calyptra campanulata, straminea, pilosa." *Bryol. Eur.*

"O. fastigiatum, *Bruch in Brid. Bryol. univ.* I, p. 785; O. affine, *Schwaegr. Suppl.* I, P. 2, p. 19, T. 49, (*nec Schrader*);" (*fide B. et S.*)

HAB. "On trees by a footpath between Greta Bridge and Rokeby; 1810;" *Mr. Borrer.*

Leaves shorter and broader than in O. *affine*, evidently acuminate, more widely areolated, strongly revolute at the margins. Calyptra slightly pilose, *straw-coloured, tipped with deep brown* (but greyish-green in O. *affine*). *Vaginula smooth.* Pedicel not exceeding the vaginula, tapering into the collum. Capsule wider and rather shorter than in O. *affine*, more widely striated. *Cilia linear, of a double series of cellules*, scarcely equalling the teeth. Operculum equalling or exceeding that of O. *affine.*

O. *stramineum* (described in the Bot. Society's Transactions) bears great external resemblance to O. *fastigiatum*, but differs in the greener, narrower leaves; *the scarlet-tipped calyptra* (which indeed distinguishes it from all its allies except O. *patens*); the very hairy vaginula; the shorter capsule, when dry usually emersed or even exserted beyond the perichætial leaves, and with the sporangium *less*, the

Plants forming very small, compact tufts. Stems short (3 or 4 lines in length), each bearing a capsule, simple or once dichotomous. Leaves imbricated, suberect (appressed when dry), ovato-lanceolate, much broader than in O. *affine*, sub-obtuse, sometimes apiculate, concave, often subplicate, navicular at the apex, the areolation slightly wider than in O. *affine*. Vaginula and calyptra smooth, the latter greyish. Capsule emersed, pale-coloured when just mature, elongato-pyriform, with a long neck tapering into the pedicel (which a little exceeds the vaginula), the outer paries rather widely areolated, and marked with 8 broad striæ. Peristome of 8 bigeminate teeth, arched into a hemisphere when moist, though slightly turned up at the apices; when dry reflexed, rarely separate. Cilia 16, the alternate ones usually not more than half the length of the others, yet sometimes equalling them, filiform, composed of a single series of cellules. Operculum convex, shortly rostrate.

O. *pallens* is difficult to separate from O. *tenellum* by the eye; the best field-characters are afforded by the *subcylindrical capsule* of the latter, the collum *not* tapering into the pedicel, and the *much larger, straw-coloured and slightly pilose calyptra.*

14. Orthotrichum *pumilum*, Schwaegr., "monoicum, pulvinatum, humile; caule dichotome ramoso, dense folioso; foliis patulis, siccitate imbricatis, lanceolatis, obtusiusculis, costato-concavis; capsula ovata, brevicolla, late striata; calyptra campanulata, nuda." *Bryol. Eur.*

"O. pumilum, *Schwaegr. Suppl.* I, P. 22, T. 50; *Kaulfuss in Sturm Deutschl. flor. crypt.*, Heft. 16; *Brid. Bryol. univ.* I, 286; *Web. et Mohr. bot.* T. 232; O. affine, β. *pumilum*, *Hook. et Tayl. Musc. Brit.* p. 74.

Hab. On an ash-tree in Clifton Ings, near York; April, 1843.

This is very distinct from O. *affine* (of which it is made a var. in Musc. Brit.) by the following characters. *Leaves shorter and wider*, the upper slightly apiculate, not recurved as those of O. *affine* most commonly are, the margins strongly revolute, the areolation something wider, less distinctly dotted and scarcely papillose, their hue a deep dull green, with none of that yellow tinge usual in O. *affine*. *Pedicel shorter* (barely equalling the vaginula) *not tapering at all into the collum*, but in O. *affine* passing gradually into it. Capsule *much shorter and rounder*, more widely areolated, *the striæ reddish*, in O. *affine pale yellow*. *Operculum shorter, conical*; that of O. *affine* always decidedly rostrate. Calyptra more convex, *covering two thirds of the capsule*. Peristome shorter; the cilia about half the length of the teeth.

O. *fallax*, Bruch., is the nearest ally of O. *pumilum*, and is to be distinguished from it by the longer and sharper pointed upper leaves, *the longer capsule, constituted of a more delicate membrane, the much paler striæ*, the longer inner peristome, and *the pedicel tapering into the collum*.

I may add that British Botanists appear to have been in the habit of referring to Orthotrichum *affine* β. *pumilum* any small *Orthotrichum* with an immersed capsule and 8 cilia; and I have seen O. *pumilum*, O. *fallax*, O. *tenellum* and O. *stramineum* preserved in herbaria under this name.

15. Orthotrichum *Sprucii*, Montagne *in litt.*, monoicum, subpulvinatum; caule subramoso; foliis erecto-patulis, ligulato-oblongis, apice rotundatis minute apiculatis, carinatis,

Stems simple or sparingly dichotomous. Leaves blackish-green (probably owing to the locality), erecto-patent or patent; the lower oblong, with or without an apiculus, concave, with plane margins, destitute of chlorophyll, the nerve seldom reaching above the middle; the upper more elongated, ovali- or oblong-ligulate, minutely apiculate, with broadly recurved margins, chlorophyllose, the nerve longer, yet failing decidedly below the summit and more *suddenly* than usual in the genus; *all* very obtuse, keeled, the perichætial ones so strongly so as to be almost conduplicate, the areolation wider than in any other European species except O. *diaphanum*, the nerve slender in proportion to the breadth of the leaf. Pedicel scarcely exserted beyond the vaginula, tapering into the neck of the capsule. Capsule brownish, overtopped by the perichætial leaves, obovato-pyriform, short-necked, the outer paries rather thin, closely areolated near the mouth, marked with 8 narrow yellowish striæ (of 4-5 rows of cellules, the interstices of 11-14). Operculum convex, apiculate. Calyptra large, greyish, campanulate, convex, naked. Outer peristome when moist nearly horizontally connivent over the mouth of the capsule, when dry reflexed, the teeth rarely separated. Cilia 8, composed of a single (more rarely of a double) series of cellules, dilated at the base, equalling the teeth or nearly so, when moist horizontal, when dry erecto-arcuate. Seeds deep olive, minutely granulated, slightly smaller than the pale green seeds of O. *affine*. Male flowers terminal or pseudo-axillary, gemmiform, perigonial leaves ovate, or even suborbicular, very concave, with a slender nerve; antheridia on a rather long pedicel, destitute of paraphyses.

As above stated, Dr. Arnott gathered this species near Glasgow in 1824; at that time he considered it a var. of O. *affine*, corresponding with the O. *Rogeri* of Bridel. On the authority of Dr. Arnott's Glasgow specimens, Mr. Wilson referred my moss to O. *Rogeri*, and the same opinion has been adopted by Bruch, neither of these eminent Botanists possessing an original example of Bridel's moss. From the first, I have disputed the correctness of this decision, and on communicating my doubts to Dr. Montagne, he perfectly agreed with me in regarding the moss a nondescript, and bestowed upon it the name under which it is now published. Very lately, I have received from Dr. Arnott a scrap of an original specimen of O. *Rogeri* (gathered by Roger and named by Bridel himself) which has convinced me that O. *Sprucii* is truly distinct from it, and to this opinion Mr. Wilson now cordially assents. I am not disposed even to consider O. *Rogeri* its nearest ally; the leaves of the latter are yellowish (as Bridel describes them), rather widely areolate, yet much less so than in O. *Sprucii*, far longer and narrower (not differing much in form from those of O. *affine*) and by no means apiculate; the capsule is very different in form ("elongato-oblonga") and the cilia, according to Schwaegrichen: "externis dimidio fere breviores." In the field, small specimens of O. *Sprucii* might be mistaken for O. *pumilum*, which seems to me to be the species most closely related to it; but a comparison of the characters given above of these two mosses will show that they may be readily distinguished on examination. In fact, there is no European species with which O. *Sprucii* can possibly be confounded. Dr. Montagne remarks to me: "Ses feuilles la feront distinguer de tous les

This may be distinguished from O. *affine*, which it somewhat resembles, by its much smaller size; the smaller and *cylindraceous capsule*, which is more widely areolate and *marked with* 8 *broad orange-coloured striæ; the shorter almost conical lid*; *the much larger straw-coloured calyptra*, and the proportionally smaller and less opaque peristome.

17. Phascum *Floerkeanum*, Web. et Mohr.

Var. *β.* "foliis longioribus, angustioribus, magisque patulis distincta, calyptra ob capsulam angustiorem semper conica erectaque occurrit." *Bryol. Eur.*

Phascum badium, *Nees et Hornsch.*, *Bryol. Germ.* I, p. 53, t. V, f. 11, (*fide B. et S.*)

Hab. In a stubble-field on the S. side of Bulmer Hagg, near Castle Howard, growing with *Pottia minutula*.

Leaves much narrower than in the normal form, brown, the nerve rather strong, the margins subdenticulate upwards and reflexed. Calyptra conical, quite erect, generally with two or more fissures at the base.

Phascum Floerkeanum is frequent in the autumn in stubble-fields on a clayey soil in the neighbourhood of Castle Howard, where I have found specimens uniting it with the var. *α*.

18. Phascum *triquetrum*, n. sp., monoicum, subacaule; foliis trifarie dispositis, conniventibus, obovatis, apiculatis, carinato-navicularibus, margine reflexis, costa excurrente; capsula magna, horizontali, sphærica, immersa.

Ph. triquetrum, *Spruce in Eng. Bot. Suppl. ined.*

Hab. In bare spots among short grass on the summit of the cliffs between Brighton and Newhaven, where it was discovered by Mr. Borrer in April, 1844.

Plants appearing to the eye like little triangular bulbs, equalling those of *Ph. muticum* in size, about 9-leaved, green at the time of flowering but assuming a reddish-brown tinge as they advance towards maturity. Leaves trifarious, closely imbricated and connivent; the three lowest minute, ovate, nerveless, occasionally cloven; the three uppermost (those of the perichætium) broadly obovate, apiculate, sharply carinate, remarkably boat-shaped, being hollowed out upwards as it were for the reception of the capsule (which they closely embrace), and having the nerve bent almost at a right-angle at the point of greatest concavity, their margins reflexed above and denticulate, their points recurved and diaphanous, their nerve slightly excurrent; the intermediate leaves resemble those of the perichætium except in being smaller and less concave. Inflorescence monoicous; male flowers gemmiform, one or two arising from near the base of the plant, each consisting of 3 or 4 minute obovato-lanceolate nerveless leaves, sometimes unequally bifid or even trifid, including 2 antheridia, destitute of paraphyses. Vaginula small. Calyptra minute, diaphanous, covering a very small portion of the capsule, subdimidiate, usually remaining in adhesion to the capsule by its entire side. Pedicel very slender, curved at an early stage, but gradually raising itself erect as the capsule advances towards maturity, suddenly bent at a right angle at its junction with the capsule. Capsule large, obsoletely rostellate and the axis considerably depressed when young, but when fully grown spherical and the axis very nearly horizontal. Seeds rather large.

The only species for which this beautiful and interesting *Phascum* can be mistaken is *Ph. muticum*. The latter is, however, admirably distinguished by the perichætial leaves being only *two* (not *three*) in number, ***strongly convolute and***

It is also given under that name by Moug. and Nestler as No. 802 of their Stirp. Crypt. Vogeso-Rhen., 1826."

19. Tortula *ambigua*, B. et S., "dioica; brevicaulis; foliis patulis, ligulato-lanceolatis, obtusis, apice subincurvis, capsula cylindrica erecta, annulo simplici subpersistente instructa; operculo breviori, elongato-conico, margine integro; calyptra brevi, solum operculum obtegente; peristomio brevi, semel contortò." *Bryol. Eur.*

"Barbùla rigida, trunco exiguo, foliis patentibus margine involutis, thecis oblongis erectis. *Hedwig. Musc. Frond.* I, p. 65, T. 25, fig. 3 et 5; *ejusd. spec. musc.* p. 116. *Bridel Bryol. univ.* I, p. 528, et *Suppl.* I, p. 824;" (*fide B. et S.*)

Hab. On a mud capped wall by the side of the road leading out of New Malton towards York, where I found a single patch growing along with abundance of *T. rigida*, Nov. 19. 1844.

This new species belongs to the small group of Aloid *Tortulæ*, which comprehends besides it only three species, viz. *Tortulæ rigida* Schultz (T. enervis *Musc. Brit.*) T. *aloides* B. et S. (T. rigida *Turn., Musc. Brit.*) and T. *brevirostris* Hook. et Grev. Between the two former of these it is almost intermediate, but differs from both in the more spreading leaves, with usually cucullate apices. From T. *rigida*, it differs further in the longer leaves, the longer and *cylindrical* (not *ovato-oblong*) capsule, the shorter operculum, the much narrower annulus, the peristome only *once* twisted (in T. *rigida* 3 or 4 times), and *the calyptra merely covering the lid*, but in T. *rigida* sheathing half the capsule. From T. *aloides* it may be distinguished by the broader and less acute leaves, *with a much broader and thinner nerve, the capsule erect* and of a uniform colour, while that of *T. aloides* is curved and of a deeper hue on the upper than the underside, the *subulate* (not rostrate) lid, the *broader basal membrane of the peristome and the smaller seeds.*

I have attentively studied *Tortula ambigua* and believe it a good species; for although I have now and then found a capsule of T. *rigida* with the peristome equally short and only once twisted, yet the other characters (and especially that derived from the calyptra) were always constant and unequivocal.

20. Tortula *marginata*, B. et S. " humilis, simplex, gregaria vel cæspitulosa, dioica; foliis late oblongo-lanceolatis, marginatis, costa excurrente mucronatis; capsulæ oblongæ operculo brevirostro, peristomii membrana basilari angusta." *Bryol. Eur.*

" T. cæspitosa (Hook. et Grev.) *Montagne, Archives de botanique*, Tome I, p. 135. *De Notaris Specim. de Tortul. Ital.* No. 11. *Nec Schwaegr*;" (fide B. et S.)

Hab. On walls and rocks of soft sandstone in the neighbourhood of Castle-Howard, most abundant in the park quarry. " Stone-pits, Henfield;" *Mr. Borrer.*

When I first found this moss I hesitated to refer it to the *Barbula marginata* of the Bryol. Europ., because of its differing in some respects from the figure and description in that work. Mr. Wilson, however, whom I consulted on the subject, remarks to me, " Your *Barb. marginata*, if not exactly like the figure, etc. of Bruch and Schpr., is quite as much so as what I suppose to be the original in Herb. Hook. which has the leaves quite erect, and more linear than in Bryol. Eur." Through the favour of the same gentleman, I have peristome and the slenderer teeth; *in the double annulus* (single in *T. muralis*); and finally, *in the dioicous inflorescence.* The male and female plants grow intermixed and do not differ at all in appearance; the perigonial leaves are precisely similar to those of the perichætium, and enclose about 3 antheridia.

21. Tortula *papillosa*, Wils. MSS, cæspitulosa; foliis obovatis, valde concavis, patentibus, siccitate margine involutis, laxe areolatis, papillosis, costa in mucronem vel pilum producta.

Hab. On old elms at Huntington near York; May, 1843. Castle-Howard park. "Near Llansaintffraid, N. Wales; June, 1844;" *Mr. Wilson.*

This resembles small specimens of *T. lævipila* Schwgr. in habit and essential character; it forms, however, more lax and spreading patches, and frequently grows intermixed with *Orthotricha*, especially O. *diaphanum*, from which it is not readily distinguished by the eye. The stems are short, branched near the base. The leaves are spreading but not recurved, shorter than those of T. *lævipila*, usually *less obtuse, their nerve much less produced* and towards the apex of the leaf beset with short articulated filaments, as in *Tortula membranifolia*, Hook.; they are besides *more hyaline and brittle, far more widely areolated, and papillose on their under surface.* They do not twist in drying, but *the margins speedily become involute* and the apices connivent.

22. Tortula *squarrosa* De Notaris, laxe pulvinato-cæspitosa; foliis lineali-lanceolatis e basi vaginante, squarrosis, subtortilibus, alis inflexis et undulatis, subtus granulosis, margine subdenticulatis, costa crassa cum apice evanida.

T. *squarrosa De Notaris Specim. de Tort. Ital.* No. 31.

Hab. "On the beach at Hastings and in Beeding Chalk-pit, Sussex; in both stations without fruit;" *Mr. Borrer.*

In the 'Bryol. Europ.' this is considered a variety of T. *tortuosa*, W. and M., but I believe incorrectly. It differs from that species in the less compact tufts; the *far shorter and decidedly squarrose leaves* (not patent or suberect), less opaque and furnished with a narrow diaphanous border (of empty cellules) at the expanded and semiamplexicaul base, *papillose,* especially towards the apex, where they are for the most part *truly,* though minutely, *denticulate*;* the margins more strongly inflexed and undulate; the nerve *not* paler than the pagina, *not* produced beyond the summit, and *plane or slightly concave* on the upper surface, but *convex* in T. *tortuosa.*

In habit and in the shape of the leaves *Tort. squarrosa* bears considerable resemblance to *Trichostomum Barbula,* Schwgr.; but the latter may be distinguished by the *browner and more rigid leaves,* which are patent but not squarrose and twisted, their margins more strongly incurved, *their nerve broader and stronger,* and their point less attenuated.

Respecting *Tortula squarrosa,* Dr. Montagne has observed to me that it fructifies in Sicily and at Algiers. "Elle vient aussi aux Canaries où M. Webb l'a récoltée, et elle figure page 35, de la Cryptogamie de ces îles. C'est bien à tort que Bruch et Schimper, qui n'ont pas vu le fruit, ont rapporté cette jolie Mousse au T. *tortuosa,* nam ab eâ toto cœlo distat."

23. Tortula *vinealis,* Brid.

Var. β flaccida, " caule elongato, flexuoso, foliis remotis, peristome of T. *vinealis* affords a good field-character for distinguishing it from T. *fallax*, and I mention it here because I omitted to record it in my paper on the 'Musci and Hepaticæ of Teesdale.'

RICHARD SPRUCE.

Welburn, near Whitwell,
Yorkshire, March 8, 1845.

Description of a new British, and a new American species of FISSIDENS; by W. WILSON, Esq.

(*With a plate*, TAB. IX.)

Fissidens *Bloxami*, (Wils.) caule simplici brevissimo declinato, foliis oblique lineari-lanceolatis acutis immarginatis denticulatis, lamina dorsali supra basin desinente, seta terminali, capsula erecta, operculo e basi conica oblique rostrato, annulo revolubili. (Tab. IX. A.)

HAB. Orton Wood, near Twycross, Leicestershire, on clayey banks with F. *taxifolius*, found in April, 1844, by the *Rev. A. Bloxam*. Fruit ripe in January.

Caules perpusilli, tenerrimi, subcæspitoso-gregarii, vix lineam metientes. Folia 4-6, infima minima, fere squamiformia, late ovata, acuta, remota, squarrosa, dehinc sensim longiora et confertiora, distiche patentia; superiora oblongo-lanceolata, ad medium usque conduplicata, toto ambitu præcipue ad basin anticam denticulata, nervo valido viridique sub apicem dissoluto instructa, lamina dorsali longe supra basin desinente; hinc folia obliquata et quasi undulata videntur; amœne viridia, siccitate haud crispabilia, laxe hexagono-subinde pentagono-areolata, sicca guttulata. Flos masculus ad caulis basin, gemmiformis, tetraphyllus. Seta ascendens, basi fere geniculata, 2-4 lineas longa, gracilis, subflexuosa, pallide rubella. Vaginula sub-elliptica, fuscidula. Capsula erecta vel suberecta, oblongo-elliptica, basi attenuata, ore vix contracta, sicca sub ore constricta, olivacea. Operculum e

basi conica oblique subulato-rostratum, capsula vix brevius, e cellularum seriebus erectis 32 conflatum, dentibus translucentibus rubrum, margine annulo majusculo albido mox revolubili fimbriatum. Peristomii dentes rubri, bifidi, cruribus inæqualibus, dense articulatis, superne papilloso-scabris. Calyptra subulato-conica, uno latere fissa, operculi longitudinem æquans, fuscidula. Sporæ minutæ, olivaceæ.

From its nearest ally F. *Hornschuchii*, Mont. (F. *Brasiliensis* et *serrulatus*, Hornsch.) this is distinguished by its much smaller size and by the paucity of its leaves, which are of a different shape, more evidently denticulate, and with larger areolæ. In the peculiar conformation of its leaves, and in the presence of a distinct annulus it differs perhaps from all others of the genus. In aspect it is not unlike *Dicranum viridulum*, Eng. Bot., t. 1368, but that is a state of *Fissidens bryoides*, essentially distinguished by the margined leaves. *F. Bloxami* is one of the smallest of the genus.

Tab. IX. A. Fissidens Bloxami. Fig. 1. Plants; *nat. size. f.* 2. Plants; *magn. f.* 3. Operculum. *f.* 4. Calyptra. *f.* 5. Portion of the peristome. *ff.* 6—11. Leaves, from different parts of the stem; all *magn. f.* 12. Apex of a leaf; more highly *magn.*

Fissidens *obtusifolius*, (Wils.) dioicus; foliis 6—10 (in caule sterili 20) subovalibus brevissimis obtusis evanidinerviis in-

BOTANICAL INFORMATION.

Swan River Botany.

Our botanical friends will be glad to know that the indefatigable Mr. James Drummond, of the Swan River, with the assistance of one of his sons (Johnston Drummond, who evinces the same ardent love as, and we trust he will have the same degree of success in Natural History pursuits which has so eminently distinguished the father and the uncle) has again explored a very interesting district in the interior of that colony, and has sent, in continuation of his former series, sets of three hundred and fifty species numbered and in very excellent condition, consisting of many rare and new plants. Mr. Robert Heward, No. 5, Young Street, Kensington, has undertaken the distribution of these plants, and to him letters may be addressed by those wishing to possess sets. It may be observed that in the thirteen sets now sent, there is no difference in regard to number or condition; they are all equally good. These plants, as the former ones, are charged by Mr. Drummond at £2 the hundred species; to which will have to be added the share of expenses.

MR. SPRUCE; *Plants of the Pyrénées.*

We rejoice to hear that Mr. Richard Spruce, of York, has the intention of spending the ensuing spring and summer in the Pyrénées, for the purpose of collecting and publishing specimens of the rarer *Flowering-plants*, *Mosses*, *Hepaticæ*, and *Lichens* of those mountains; and we know of no one, who, from education and experience in preserving plants with the utmost care and neatness, is better calculated for such a task: and how well qualified he is for acquiring a knowledge of the Cryptogamic plants of the region in question may be inferred from his valuable Memoir on some new British Mosses, which appears in the present number of our Journal.

The researches of Mr. Bentham and Dr. Arnott, among the accomplished botanists of our own country, have demonstrated the Phanerogamic riches of the Pyrénées, and even since the visit of these gentlemen several interesting novelties have been detected, especially in the western mountains. There remain, however, some extensive and promising districts, especially on the Spanish side of the chain, about which little is known, and therefore many discoveries doubtless still remain to be made. But it is in *Cryptogamia* that the richest harvest, or at least that productive of the most novelty, may be expected; for certainly no competent Cryptogamist has ever yet devoted sufficient time and attention to the search of these obscure tribes. *Lichens* are known to be numerous and beautiful in the Pyrénées, and some rare and interesting *Mosses* have been detected. The whole of the specimens collected by Mr. Spruce will be preserved in the best possible manner; the flowering-plants will be dried *entire*, whenever practicable, and the Mosses, &c., with their fructification as perfect as it is possible to procure them. He proposes to devote a period of not less than six months to the task, commencing with the month of April, and he trusts to have the phænogamic portion of his collection ready for sale in London by the end of autumn, and perhaps the first Century of Pyrethan break the ground for those who shall follow him in exploring it, and yet his collections comprise much that is new and nothing but what is interesting, while those very plants are in the hands of so very few botanists, that even the same that he gathered will not fail to be generally acceptable. The precise time of the appearance of the Spanish plants cannot at present be assigned; but we may add that like those of the Pyrénées, they will comprise a large proportion of Cryptogamia.

Botanical Geography of Britain.

Mr. Hewett Watson is induced to address a Circular to his botanical friends, in consequence of repeated inquiries, whether it is his intention to proceed with the enlarged edition of his work on "The Geographical Distribution of British Plants." After long hesitation, and not without much reluctance, he has finally resolved to discontinue that work, as being on a scale too extended for completion within any moderate time. Such a treatise must be comparatively useless, until the *whole series* of Natural Orders becomes complete; and the experience acquired in preparing some of the other Orders for the press, which should have next followed those already printed, has clearly convinced him that too many years of close application would be required for bringing the whole work to a satisfactory conclusion. He has therefore resolved to begin afresh, under such an arrangement of the subject, as will give to each successive volume the character and usefulness of a work complete in itself; bearing reference to preceding volumes, indeed, but independent of those which may (or may not) follow. It is now proposed to divide the general subject into the three following heads, which may be taken either as three separate works, or as three divisions of a more comprehensive work:

1st. *Botanical Geography*—intended to embrace those apparent connexions which may be traced between the floral productions and the physical geography of countries; and in tracing which the plants are viewed *collectively*, with reference to each other and to their places. A first volume will describe the Botanico-geographical features of Britain. Succeeding volumes will compare the botany of other parts of the globe with that of Britain.

2nd. *Areas of British Plants*—intended to show how far the various plants have been ascertained to extend over the surface of Britain and other parts of the world; each species being here taken *singly*, in rotation, and traced through Britain and the rest of the earth's surface. A first volume will show the *Topographical Areas*; the species being traced through those eighteen Districts of Britain, which were explained in the discontinued edition before referred to. A second volume will be devoted to their *Geographical Areas*, the species being traced through larger sections of the earth generally.

3rd. *Localities of British Plants*—intended to be a compilation of local lists and localities; the precise plan of this work being left undecided at present.

[N.B. It may be well to mention here, that manuscript localities are no longer wished from other botanists, unless they can be accompanied by specimens in confirmation.]

It will be more easy to understand this proposed change in comprehensive than the design, may be held something better than a mere fragment of a large work.

[The following fragments are given by Mr. Watson, as examples of the proposed volumes.—Ed.]

Botanical Geography of Britain.—" Climatic or Ascending Zones of plants are designed to indicate their relative distribution under the joint influence of altitude and latitude, with other conditions of a more local character, such as proximity to seas or mountains, the state of exposure or shelter, &c. It has been explained, that connexions may be traced between each of these conditions singly; but that everywhere the influence of any one is more or less disturbed and modified by that of others. Their effect upon the flora or general vegetation is mostly indirect or remote; that is, the flora varies with the climate, and the climate varies with altitude, latitude, and other conditions of place and surface. On a single isolated mountain the ascending zones of vegetation are very strongly marked, in accordance with altitude; some species disappearing, other species appearing, one above another, as we gradually ascend from base to summit. Yet on a single mountain we may see that local changes in the character of its surface, and the differences of aspect on its declivities, whether facing to or from the sun, will disturb the regularity of its ascending zones. On an extended range of mountains the disturbing effect of local peculiarities will become much more obvious. And when we have to adapt our zones to several groups of mountains, dissimilar in extent, elevation, latitude, maritime proximity, and other circumstances, it then becomes difficult to define them with any exactness. We experience this difficulty in tracing the ascending zones of plants in Britain. The absolute elevation at which the same species will grow, varies by many hundred feet on different mountains. And as this variation is by no means uniform with different species, we find local changes in their relative elevation also, the limit of one being compared with the limit of another. Notwithstanding such local exceptions, however, the general rule will be found true, that a species which rises higher than another on one range of mountains, will usually be found higher on other ranges; and the commoner the species, the more exact is the rule found to be.

It is upon the prevailing regularity of this fact or rule, that the climatic zones of plants are founded and defined; the presence or absence of some common and conspicuous species being made the test of the zone. The primary division which I have proposed, as one best applicable in Britain, is ostensibly founded upon an artificial character; namely, the presence or absence of cultivation. It is by this character that I would distinguish the lower from the upper zones of plants; giving to the former the common designation of *Agrarian*, and calling the latter by the name of *Arctic Zones*. Or, to prevent confusion with subordinate divisions, it may be well to say, in the first instance, *Agrarian Region*, and *Arctic Region*.

In the spontaneous vegetation of Britain, we can find no character equally obvious and general with that afforded by the cultivation of grain. The interests of mankind are so intimately connected with the production of corn, that we shall every where find cultivated fields as far up the valleys and acclivities of the mountains as their climate will allow.

annual attack of the scythe in early summer ; but we require its presence, as a character, only in those spots which remain uninvaded by scythe or ploughshare ; and in such spots we seldom seek it in vain, until arriving about the line where climate itself arrests the ascent of agriculture.

These two regions may be again divided, each into two subordinate zones. For a suitable division of the agrarian region, we must again look to the artificial characters impressed upon its surface by the industry of man, who has so extensively changed those antecedent characters which were given by nature. Accordingly, I take the presence or absence of wheat-fields, as the leading test of distinction between a *Lower Agrarian Zone* and a *Higher Agrarian Zone* ; the upper portion of the region, for a considerable breadth, being wholly without wheat-fields. The limit of wheat appears not to correspond with the limit of any very conspicuous native plant. So far, the former may be deemed less suitable to the object in view ; but it is a more general test, and therefore more applicable in practice, than any single native plant would prove."

* * * *

British and Polar Botany.—"From the preceding enumeration of their species, it appears that the frigid coasts of the Polar seas, beyond the seventy-second degree of north latitude, support an extremely scanty flora, including only a hundred and thirteen species, so far as hitherto ascertained. Most of these are perennial herbs, of dwarf stature. If they attain any considerable size, it is only in the horizontal direction, by forming tufts, or by branching and spreading over the surface of the ground. Nothing is seen to rise with tall stems, like those of our Butomus or Digitalis ; nor are there any slender climbing plants, like the Tamus or Bryonia. Trees are utterly unknown ; and the few shrubs which exist here, are those of the most humble growth, belonging to the orders of Amentaceæ and Ericaceæ. The general character of the floral landscape must be widely dissimilar from that of the British coasts: we may find the nearest approximation towards it around the bleak summits of our Highland mountains.

It would be tedious to write down the many species, or even the genera or orders, of the British flora, which are wholly absent, and many of them far absent, from the Polar lands. These negative characters of the latter are too numerous for specification. Let us adopt the opposite course, and seek for resemblances between the productions of countries so widely distant. All the nineteen orders, under which the plants of the Polar flora are arranged in preceding pages, are common to the two sections—the Polar Coasts and the British Isles. So far there is a strong affinity; the difference on the side of the Polar botany being negative, or shown only by the absence of other orders more liberally supplied to the British Isles. But sameness in the orders of plants is of course compatible with much less similitude in the subordinate groups; and when we look to the fifty-seven genera of the Polar flora, we arrive at positive characters of difference, since eleven of these genera have no species to represent them in the British flora. And on coming to the more exact comparison of species, we see that nearly two-thirds of the Polar species are unknown among the native plants of the British Isles. Apparently, somewhere blance than is really the case. Although half the species of the Azores may be truly indigenous in the British Isles, it is to be recollected that the converse of this by no means holds true: the British species are so much more numerous, that one-half of the Azoric flora is equal only to about one-sixth of the British flora, taking them in round numbers; and hence it may readily be conceived, that the many additional species of Britain will cause a predominance of dissimilar forms in the floral physiognomy of our own island. This dissimilitude is yet more widened by the different degrees in rarity or prevalence of those species which are found in both countries; many of those which are accounted the rarities of one country being the vulgarities of the other. For example, many English botanists may pass their lives without meeting with plants of Polycarpon tetraphyllum, Senebiera didyma, Lotus diffusus, Cyperus longus, Briza minor, &c. &c., in a state of nature: they are found to be among the common weeds of the Azores.

It likewise happens, in numerous instances, that the species which are peculiar to one of the countries, constitute an important, or leading character of the vegetation. In example of this, it may be remarked, that not one of the trees or larger shrubs of Britain can be held certainly indigenous in the Azores; and the same remark would be equally true, if extended to a large proportion of our commonest and most conspicuous herbaceous plants. In turn, those shrubs and herbs which give a character to the Azoric landscape, belong usually to species, and often to genera, quite different from those of Britain. Erica Azorica, the most generally distributed shrub of the Azores, and one which frequently attains the form and dimensions of a small tree, bears little resemblance to any British species of Erica, unless it be to the Irish E. Mediterranea. A second very abundant shrub in some of the islands, and also one of arborescent stature, is a variety of the Juniperus Oxycedrus, which is far larger and more ornamental than the wild juniper of our own isles. In these two characteristic shrubs there is, at least, a generic similarity to those of the British Islands; as there is also in the beautiful Vaccinium cylindraceum, and the very peculiar and much less plentiful Euphorbia Stygiana. In the Myrica Faya, the resemblance scarcely amounts to generic;"—

* * * * * *

"*Topographical Areas.*—It will be observed that no authority is quoted after the names of those districts, in which I have myself collected or seen the species. In all other instances, the name of the district is followed by that of some authority; a preference being given to the labels of specimens preserved in my own Herbarium. The note of certainty "!" indicates the possession of a specimen from the district, and when it follows the name of the authority, it indicates also the person to whom I was indebted for such specimen. Names in *italics* imply the supposition of the species not being indigenous. Those enclosed [ ] require confirmation.

RANUNCULACEÆ.

Clematis Vitalba, Linn. Lat. 50—53 (or 55.) Alt. 00. Peninsula! Channel! Thames! Ouse: Miss Bell; Severn!

South Wales: Mr. Lees. North Wales! Trent! Mersey: Mr. Bowman. Humber: Mr. Churchill Babington! Tyne: Mr. Embleton! Lakes! West Lowlands: Mr. Lloyd. East Lowlands! East Highlands: Mr. Croall, to Bot. Soc. London! West Highlands: Mr. Stables! North Highlands! North Isles: Dr. Gillies.

Thalictrum majus, Crantz. Lat. 53—57. Alt. 0—500. Humber: Mr. Bowman! Tyne: Mr. Bowman! Lakes! West Lowlands: Mr. Lloyd. East Lowlands: Flora Ber. East Highlands!

* * * * * *

"*Geographical Areas.*—On the whole, in the present state of botanical knowledge, the best course appears to be that of simply enumerating such of these eighteen Sections of the earth's surface, in which the species has been recorded to grow wild; the authorities for the fact being usually omitted, in order to keep down the bulk of the volume. To those sections, from which I happen to possess specimens in my herbarium, the names of the collectors or donors of the specimens are added, with the note of certainty "!". And in some other instances, more particularly where there is a want of certainty, an authority is likewise given, by way of clew towards confirmation or correction.

RANUNCULACEÆ.

Clematis Vitalba, Linn. Lat. 37 (or lower)—53. Netherlands. France. Germany. Turkey. Italy. Spain. South Russia. Arabia: Forskael.

Thalictrum Alpinum, Linn. Lat. 42—71. Ireland. Scandinavia. France: Sir W. J. Hooker! Germany. Italy (Alps). Spain (Pyrenees). Arctic Russia. South Russia (Caucasus). Western Siberia. Eastern Siberia. Canada. Arctic America. Arctic Isles.

Thalictrum minus, Linn. Lat. 37—68. Ireland: Mr. Shuttleworth! Scandinavia. Netherlands: Dr. Petit! France. Germany: Herr Hornung! Turkey. Italy: Mrs. Stewart! Spain. Middle Russia. South Russia. Western Siberia. Eastern Siberia. Kamchatka: Botany of Beechey's Voyage, but the species doubtful. (Including also T. majus of Crantz).

Thalictrum flavum, Linn. Lat. 38—65 (or 69.) Ireland. Scandinavia. Netherlands: Dr. Petit! France. Germany: Herr Hornung! Turkey. Italy. Spain. Arctic Russia: Led. Flora Ros. North Russia. Middle Russia. South Russia. Western Siberia. Eastern Siberia. Kamchatka: Gmelin, but the species seems uncertain."

Botanic Rambles in Braemar; by WILLIAM GARDINER DUNDEE.

In our last volume, p. 138, we noticed the intention of Mr. Gardiner, the intelligent Botanist of Dundee, to prepare sets of specimens of Scottish and chiefly Highland plants for sale. These are now in circulation, and we can flowers; the verdant hue of the fields and woods invigorates and delights the eye; the ear is soothed with the happy sounds of innocence and love; and all around are thousands of blossoms, arrayed in their varied robes of loveliness, to gladden the heart and awaken its holiest thoughts and feelings; for

> "A flower is not a flower alone,
>   A thousand sanctities invest it;
> And as they form a radiant zone,
> Around its simple beauty thrown,
> Their magic tints become its own,
>   As if their spirits had possessed it."

Such a delicious morning was the 24th of June; and I could have lingered by the fragrant hedge-rows, where the merry bee was sipping the honied treasures of the wild rose, to admire the beautiful structure of Flora's more common productions, and hold sweet converse with such humble gems as the daisy and the violet; but as the purpose of my present mission was to search out her rarities, all tendency to loitering, where these were not to be found, had to be subdued."

In this agreeable state of mind does Mr. Gardiner set out upon his excursion, and notes down the scenery and the vegetation, and strong impression they made upon him. The second ramble is to the "Linn of Corrymulzie;" the third to "Ben-na-Board," rich in rare Alpine plants, especially Cryptogamia; the fourth to "Morne" mountain; the fifth to "Craig Koynoch and the Lion's Face;" the sixth to "Glen Callater," where, as our author observes,

> "Boon nature scattered free and wild
> Each plant or flower, the mountain's child;"

the seventh to "Cairn-a-Drochel;" the eighth to "Ben Beck;" the ninth, "Canlochen;" the tenth, "Glen Quoich;" the eleventh, "Falls of the Garrawalt, and forest of Ballochbowie;" the twelfth, "Ben Avon." These are all mountain excursions, and are followed by an appendix on the plants of the low grounds of Forfarshire, and especially those of the coasts; spots that have been rendered classical by the previous researches of a Don and a Drummond.

HOOKER, *Species Filicum*.

The third part of this work has recently appeared, with its accompaniment of twenty plates, representing thirty-six species hitherto unfigured, and indeed in general new. The extensive genus *Trichomanes* is brought to a conclusion, and embraces eighty-seven species. Some remarks are given on the "*Hymenophyllaceæ*" of Dr. Presl, with the new genera of which our author expresses himself at variance. Next to the *Dicksonieæ*, the third sub-order, *Davallieæ*, follows. *Davallia* itself occupies the whole of the remainder of the forty-one pages, and yet does not include all the species. One hundred are at present enumerated, the rest will follow in the succeeding number. But let it be observed, the author preserves the original genus of Sir J. E. Smith nearly entire. "After a careful investigation," he observes, "of numerous species, I cannot but come to the conclusion that the original *Davallia* of Sir J. E. Smith should remain entire as a genus, of which the type may be considered the well known D. *Canariensis*. It is quite true, if we look only to certain species of the many new genera that have been separated

Hook. (twenty species). 5. *Saccoloma,* J. Sm. (ten species). 6. *Odontoloma,* J. Sm. (eight species). 7. *Microlepia,* Pr. (fifteen species). 8. *Cuneatæ,* Hook. (nineteen species) 9. *Dareoideæ,* of which only one species is yet described.

Musée Botanique de M. BENJAMIN DELESSERT, *par* A. LASÈGUE.

This is a work of no ordinary interest: comprising, as it does, "*Notices sur les Collections des Plantes et la Bibliothèque de* M. BENJAMIN DELESSERT; *contenant en outre des documens sur les principaux Herbiers d'Europe et l'exposé des voyages entrepris dans l'intérêt de la Botanique.*" Paris, 1845.

It is well known that the distinguished individual, whose magnificent Herbarium and Library are the principal theme of the volume now before us, has long held that place in the scientific, but especially in the botanical, world at Paris, which was filled with so much credit to himself and with such immense service to mankind by the late Sir Joseph Banks, in London. His Museum is, in a similar manner, liberally opened to all whom it may interest or to whom it can be useful, and his own valuable book, the "*Icones Selectæ,*" of which four volumes, large 4to., have already appeared, (and a fifth is on the eve of publication) and the "*Floræ Senegambiæ Tentamen,*" but, above all, the various works of MM. De Candolle, father and son, testify to the services this collection has rendered to the cause of Botany. Few persons, if any, could be equally competent with M. Lasègue to execute the task in question; that gentleman having, for a long time, had the charge of M. Delessert's Herbarium and collections: and he is already known to the scientific world, not only as so employed, but as the author of a "Memoir on the Life and Writings of M. Guillemin," of which a translation appeared in the first volume of the present Journal, p. 411.

Of the motives that induced the publication of this volume M. Lasègue thus speaks :

"Our object was, in the first instance, to make known, by a short but complete notice, the botanical collections of M. Benjamin Delessert; namely those Herbaria, and the library, which collectively form what we term his *Botanical Museum;* pointing out the origin of the principal portions of this rich museum and thus facilitating to naturalists those researches and comparisons which are indispensable in Science. And to this labour we were the more impelled, because it seemed to possess, in addition to its peculiar value, a degree of general usefulness which could not belong to the study of a less extensive cabinet.

M. B. Delessert, actuated by the same feeling as induced him to amass these treasures, is most desirous of enlarging the circle to which they have been confined; and is of opinion that it would be advantageous to concentrate, in a single volume, those scattered details which it is sometimes impossible, and always difficult, to obtain when immediately wanted; also to give, along with a history of all his own collections, an account of the principal Herbaria existing elsewhere; and adding a description of the more important expeditions which have been made for the furtherance of Science."

The importance of this work will be best understood by an enumeration of the heads into which it is divided, and a few remarks on the several subjects treated under them. The

III. On the *Progress of Botany;* including *Vegetable Statistics.* This is a chapter of very great interest. In regard to amount of species, Lonicer in 1546 indicated 879; Lobel in 1570, 2,191; Dalechamp in 1587, 2,751; Linnæus, in 1753, enumerated 5,938 species; Persoon in 1807, 25,949; Steudel in 1824, 50,649, and the same author in 1844, 95,000. M. Lasègue mentions it as a singular fact, that the proportion of the family of *Compositæ*, with the total of the vegetable kingdom, has continued the same to the present period, that is about one tenth. In 1838 M. de Candolle described 8,523 *Compositæ.* Linnæus estimated the total number of plants on the surface of our globe at 10,000; an amount now assuredly known to be equalled (if we consider the undescribed species actually in our Herbaria), by the *Compositæ* alone; Adanson at 25,000, De Candolle at 120,000, Roemer and Endlicher at 250,000 and upwards; M. Lasègue, with more probability, at from 130, to 150,000; for it must be borne in mind that of the 95,000 reckoned by Steudel as described in books, allowance must be made for species described twice, or even oftener, under different names, and a great amount of bad species.

IV. On *Herbaria* and their preparation.

V. On *Botanical Travels.*

VI. On *typical Herbaria* (des Herbiers-types).

VII. *Botanical Museum of M. Benjamin Delessert.*—In 1788 M. Stephen Delessert, eldest brother of the present possessor, began to form a Herbarium, of which the first materials were collected during his travels on the continent of Europe, also in England and Scotland, and the United States; to these were added plants from Japan, India, the Cape and Ceylon. Dying in 1794 at the early age of 23, of yellow fever, in New York, his younger brother, who from his earliest youth, occupied himself with plants, inherited his brother's collection, a part of which was indeed formed by himself, when he accompanied that brother in his travels through France, Switzerland, England and Scotland. His taste for Botany could not but have derived an additional impulse from the letters of Rousseau on Botany, which, as is well known, were addressed to M. Delessert's mother, and "la petite," for whose improvement these letters were more immediately written, was his sister, afterwards Madame Gautier.

There is still preserved in the family the Herbarium formed by Rousseau expressly for Madame Gautier. Each specimen is beautifully preserved, fastened upon ornamented paper with gilded straps or bands, and the names written in French and in Latin by Rousseau's own hand.

M. Benjamin Delessert soon resolved to increase the collection by every means in his power, to form likewise a library rich in works of botany in all languages, and to render his noble museum available to all who study this part of Natural History. In 1817, M. Achille Richard was charged with the care of these collections till 1827, and in 1820, M. Guillemin was appointed Assistant Curator, an office he held till his lamented death in 1842; since which period, the author of the work now under notice has performed these important duties.

VIII. *Botanic Galleries of M. Delessert.*—1. *Arrangement and Classification of the Herbarium.* The specimens are fastened down with small straps and pins (not glued) on folio paper, being each enclosed in an envelope or doubled sheet, and the whole are placed in light cabinets, and arranged according to the Systema Vegetabilium of Sprengel, the only woods also, and various useful vegetable productions, constitute another part of the Museum.

IX. Under this head come remarks on *the different herbaria which may be considered as the bases of the grand general collection*. 1. One of the most remarkable of them is that of M. Lemonnier, of Versailles, purchased in 1803, and which consisted, besides the general collection of 10,000 species formed by that gentleman, of those of Commerson, Billardière, Desfontaines, and André Michaux. 2, Herbaria of the two Burmanns; 3, Thunberg's Herbarium of Japan; 4, that of Ventenat; 5, those of Palisot de Beauvois; 6, that of Thuillier; and 7, many collections from the sale of the late Mr. Lambert's herbarium. Very interesting particulars are here likewise given, respecting the circumstances under which, and the countries where, these collections were made.

X. *Expeditions and Travels, the botanical collections of which are preserved in M. Delessert's herbarium.* This is a chapter full of valuable information and research, and we have: 1, under the head of *General Expeditions and Travels*; those of Billardière, Gaudichaud (three voyages, those in the Uranie, the Herminie, and La Bonite), Beechey, D'Urville, Perottet and Sieber. 2, under *Particular Voyages or Travels*; Norway and Spitzbergen, Martius; Lapland, Linnæus; Russia, Fischer and Sanson; Crimea, Leveillé; France, and in the rest of Europe;—here names crowd upon us, so as to render it impossible to extract them for our limited space. Asiatic Russia, Arabia and Persia; Patrin, Hohenacher, Kotschy, Chesney, Bové, Schimper Laborde, Wellsted, Aucher-Eloy, Jaubert, Boissier, Pinard, Roe. East Indies; Wallich and other collectors from the E.I. Company, &c., Belanger, Jacquemont, Law, Adolphe Delessert. China and Japan; Macartney, Callery, Thunberg. From the vast continent of Africa, we can only mention some of the more remarkable of the collections; those of Delille, Schimper, Kotschy, Bové, Salt, Webb, Durieu and Bory, Leprieur, Heudelot, Brunner, Beauvois, Masson, Verreaux, Ecklon and Zeyher, Drège, Krauss, &c. Various collections from the African and Indian islands. North America; de la Pylaie, Richardson, Douglas, Thomas Drummond, Fraser, Bosc, Asa Gray, &c. Mexico; Moçino, Sesse and Cervantes, Berlandier, Hartweg, Galeotti, Karwinski, Andrieux. South America; Linden, Funck, Schomburgk, Hostmann, Leprieur, Poiteau, Sellow, Auguste de Saint Hilaire, Martius, Saltzman and Blanchet, Vauthier, Gardner, Claussen, Guillemin, Gomez, Ruiz and Pavon, Dombey, Pœppig, Gay, Mathews, Miers, Cuming, Bridges, Bertero, Isabelle. West Indian Islands; Heward, Wiles, &c. Malayan Islands; Zollinger, Cuming, &c. Australia; White, Leschenault, Brown, Paterson, Caley, King, Anderson, Lhotsky, James Drummond, Preiss, Gunn, Allan Cunningham, &c.

XI. *Particular Collections, forming Part of the Museum.* Among these are enumerated plants received from different Botanic Gardens, and various general collections in *volumes*, particularly of Cryptogamic plants and especial collections, which are numerous and valuable. Under this head is mentioned a very touching legacy, of a hundred species, left by De Candolle to M. Delessert. This bequest bears date in the year of his death, 1841; "Je prie mon fils de choisir dans mon herbier cent plantes que j'ai décrites le premier, et de les adresser de ma part à mon bon et ancien ami, Benjamin Deles-

M. Webb, M. Achille Richard, M. J. Gay, M. le Comte Jaubert, M. le Dr. Mérat, M. Maire, M. Bory de St. Vincent, M. le Dr. Montagne, M. le Dr. Leveille, &c. 2, England: a brief enumeration is given of those which are in public establishments, especially the British Museum, including the herbaria of Sir Hans Sloane, Plukenet, Kæmpfer, Sir Jos. Banks, &c., and the Linnæan Society (where the herbarium of Linnæus and of Sir Jos. Banks, and of Dr. Wallich shine pre-eminent), and then the private herbaria are mentioned; those of Sir W. J. Hooker,* Dr. Lindley, Mr. Brown, Mr. Bentham, Dr. Arnott, and Mr. Fielding. 3; In Germany are the herbarium of the Museum of Natural History, of Vienna, of Prague, Berlin, Munich, of Dr. Martius, &c. 4, In Russia; those of the Imperial Academy of St. Petersburg, and of the Imperial Garden of Plants of Moscow, that of Bunge at Dorpat, Steven at Simferapol, Turczaninow in Siberia, of Meyer and Dr. Fischer at St. Petersburg, of Ledebour, late of Dorpat, &c. We must pass over those of minor countries for want of space.

XIV. *Botanical Travels.* This chapter, together with the information already given when speaking of the travellers who have contributed to M. Delessert's herbarium, is intended by the author to complete the account of travels in general which have promoted the cause of botany. They are arranged according to countries, and include a great deal of valuable information, which cannot have been collected without much labour.

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* The mere catalogue of the names of persons who have contributed to enrich an Herbarium from different countries, even when most accurately stated, can, we are aware, convey but an imperfect idea of the actual extent or value of a collection. In describing the British Herbaria, M. Lasègue has, however, made some very important, but, assuredly, accidental omissions. Under the head of "Brazil," for example, in the mention of Sir W. J. Hooker's Museum, the almost unrivalled collections of Mr. Gardner, those from the Imperial Museum of Vienna, from Dr. Martius, from Saltzmann, those purchased from Moricand, (including those of Blanchet and Vautier), and the very extensive ones from Claussen, &c., &c., are unrecorded.—[ED.]

xv. *A general list of the expeditions and of botanical travellers whose routes are described in the preceding chapters:* this too is very full.

PART III. BOTANICAL LIBRARY OF M. BENJAMIN DELESSERT.

Of the varied matter contained in this, the last Part, we must content ourselves with observing that the library in question consists of 4350 volumes, enumerated under the following heads:

Works on elementary botany		270
Anatomy and vegetable physiology		290
General phytography (descriptions and figures)		940
Special ditto	Floras	640
	Monographs	260
Botanical Geography		40
Officinal botany (botanique appliquée)		640
Botanical literature		180
Works on cryptogamic plants		360
Works on fossil plants		20
Dictionaries, journals, memoirs of academies		210
Treatises and dissertations upon nat. history in general		50
Natural history of countries and voyages		360
Works not coming under the above heads		90

CISTOPTERIS MONTANA.

It is well known that Mr. Wilson, of Warrington, discovered on Ben Lawers, in 1836, the *Cistopteris montana*, Link, (Aspidium montanum, *Sw.*) Swartz quotes under it, Pluk. Phyt. t. 89, f. 4, "*Filix alpina Myrrhidis facie Cambro-Britannica*, &c.," from which some have inferred that it had been previously detected in Wales. We have, with the kind assistance of Mr. Brown and Mr. Bennett, searched the volumes of Plukenet in the British Museum, but no corresponding specimens exist there. Buddle's Herbarium and Petiver's Herbarium, however, contain Welsh specimens (gathered by Mr. Llwyd, in one instance) corresponding with Plukenet's figure, whose synonym is quoted; and these plants are *Aspidium spinulosum*, so that to us it appears clear that that is the species intended by Plukenet. Mr. Wilson will therefore remain the first discoverer of it in Britain. We may add, that it is a native of the Rocky Mountains, in North America, and, as such, is described in Hook. Fl. Bor.-Americana.

SALICTUM BRITANNICUM EXSICCATUM; *containing dried specimens of the* BRITISH WILLOWS, *edited by the* REV. J. E. LEEFE, M.A. *Fasc. II. Saffron Walden*, 1844.

Of the importance of this work and of the manner in which the author has accomplished the first Part of it, our opinion is recorded in the 1st vol. of this Journal, p. 418, and in the 2nd vol. p. 156. The 2nd fasciculus, now before us, is executed with the same skill, and the same care is bestowed on the preparation of the specimens as in the former one. The synoptical table is not given with this, but is reserved for the third and last fasciculus, towards which some materials are already collected. The species are as follows: No. 50. Salix decipiens, Hoffm. 51—53. S. fragilis, E. Bot. 54, 55. S. Russelliana, Sm. 56—59. S. alba, L. 60—66. S. capræa, L. 67. S. hirta, Sm. 68—71. S. rupestris, Donn. 72. S. tenuior

Borr. 73. S. laurina, Sm. 74. "sent to Mr. Borrer as S. Davalliana, Sm., who remarks, 'aments much like it, but the leaves indicate one of the *Nigricantes.*'" 75. S. propinqua, Borr. 76—79. S. Weigeliana, E. Bot. Suppl. 80, 81. S. Croweana, Sm. 82. S. nitens, And. 83. S. Croweana, Sm. 84—? "Style as in S. petræa; gathered for S. Davalliana; but as Mr. Borrer remarks, the catkins are quite different. 85. S. tetrapla, Walker. 86. S. fusca, var. repens, Sm. 87. S. fusca, var. prostrata, Sm. 88. S. fusca, var. ascendens, Sm. 89. S. fusca, var. argentea, Sm. 90. S. arenaria, L. Nearly the whole of these Willows, (except S. arenaria, from Scotland), are from Richmond, Yorkshire, and chiefly gathered by Mr. Ward, "who has observed them for many years in their places of growth, and very few persons have bestowed more patient study upon this tribe of plants, or attained to greater skill in discriminating them."

The editor has been surprised, in the course of his investigations, to observe the number of monstrosities, or rather of more or less perfect changes of sex, in the specimens collected, and this subject he thinks highly worthy of careful attention. "According to Fries, the female sex is only found as you approach the northern or cold, and the male towards the southern or warm, limits of the different species; and that author is disposed to consider the circumstance as the result of climate, character. The Orders which follow next, 131—151 inclusive, being those that were about to appear in the eighth and ninth volumes of De Candolle, the author has judiciously suppressed, seeing that he could add little or nothing to what would appear in the Prodromus; and these Orders are merely enumerated, with a reference to the respective volumes of De Candolle. The remainder of the work we presume is to proceed so rapidly, and being, from the very nature of it, a compilation from other works, it will have so completely the start of the Prodromus, as to be no longer in any way connected with it: and seeing the very imperfect nature of all other "*Systemata,*" (those of Persoon and Sprengel, for example), the author has judiciously made of the continuation a "*Species Plantarum,*" in which all the species, described in books, are intended to be introduced, with brief characters and references to figures. The characters of the Orders and Genera are omitted, references being given to them in works which are in the hand of every Botanist. Such a work has its merits and its usefulness, and we are thankful to Dr. Walpers for the labour he has employed upon it. The first fasciculus includes *Solanaceæ* and part of *Scrophularineæ*; the second, and part of the third are occupied by the continuation of that family; then follow *Orobancheæ* and *Labiatæ*, which are yet unfinished, in the fourth fasciculus.

HOOKER, *Icones Plantarum,* Vol. VII, Part II.

The second and concluding portion of the seventh volume of this work appeared during last autumn, and it now includes 700 figures and descriptions of new or rare species of plants existing in the Author's Herbarium, procured from different parts of the world: a number we believe much greater than was ever attained in any miscellaneous botanical work. Nor is the present fasciculus wanting in species of great novelty and interest. Among them we may mention,—the first plate, Tab. 651, which is the *Euploca convolvulacea* of Nuttall, a new genus of *Boragineæ,* allied to *Schleidenia,* Endl.

Tab. 652, is another New Zealand and Evergreen Beech, *Fagus Menziesii*, Hook.; having been first detected by Mr. Menzies, in 1791. Tab. 654. Representations of two species of *Apodanthus* and descriptions of four species. Tabs. 658 and 659, a remarkable *Cypripedium* of Peru, C. *caudatum*, Lindl., with petals nearly a foot long! 652. *Thamnocarpus Gunnianus*, a new genus of *Algæ* of Mr. Harvey, from Port Arthur, Van Diemen's Land. Tab. 663. A remarkable Brazilian species of *Loasa*, L. *rupestris*, Gardn. Tab. 664. The rare *Tovaria pendula*, R. and P., of Peru, recently found in Jamaica. Tab. 666. *Trichantha minor*, Hook. belonging to a new genus of *Gesneriaceæ*. Tab. 667. A second species of the same genus, T. *major*, Hook. Tab. 668. *Cryptomeria Japonica*, Don, a remarkable Coniferous plant of China and Japan, where indeed it appears to be very common. Tab. 672. *Berberis Darwinii*, Hook. Tab. 673. Again an undescribed Beech from New Zealand, *Fagus cliffortioides*, Hook. Tab. 674. *Callixene polyphylla*, Hook., from South Chili. Tab. 675 and 676. *Hypoderris Brownii*, J. Sm.; a rare Fern, peculiar, so far as is yet known, to Trinidad. Tab. 678. The curious little *Dioscorea pusilla*, Hook., from Chili. Tab. 679. *Cryptonemia? Forbesii*, Harv., a Mediterranean Alga, dredged up off the Island of Paros in 50 fathom water. Tab. 684. The remarkable *Campanula Vidalii*, of Mr. Hewett Watson, the 8th Volume, are prepared, and the descriptions in the press; so that that part may shortly be expected.

De Candolle's *Prodromus*, Vol. IX. /Bentham

The publication of this important work, so long interrupted by the illness and lamented death of the elder De Candolle, is now proceeding under the direction of his son with great regularity. The arrival in the country of the 8th vol. was announced in our number for May of last year, and since then (February of the present year) the ninth volume has also reached us. From the forward state of the manuscript of some of the rest, and the assistance secured by Professor Alphonse De Candolle for several remaining Orders of plants, we may confidently expect the appearance of at least one volume in every year, and thus, ere long, we may hope to see completed this the first general "SPECIES PLANTARUM" undertaken according to the natural system.

The parts recently published, with all the merits of arrangement and completeness as to species and references given to the preceding ones by the methodical mind and the excellent mechanical arrangements of the elder De Candolle, show also a continuation of that gradual improvement in scientific detail which may be traced from the first to the latter volumes. When the work was originally commenced, it was merely intended as a brief summary of the known species, for the purpose of facilitating their arrangement in the natural series; whilst detailed descriptions and synonyms were reserved for a *Systema Vegetabilium* on a larger scale which the author had commenced; and general observations on points of structure, affinity, &c., were intended to be published in a series of detached memoirs. But as he gradually found himself obliged to relinquish the hope of continuing the larger work, he devoted more time and space to the *Prodromus;* and becoming gradually aware that the efforts of a single man could make but slow progress in the elucidation of the total number of plants known, (now above 100,000 species), he accepted the offers of several friends to undertake the elaboration of distinct portions: thus the work has now become a collection of independent Monographs, placed in order by a common editor, and reduced to a uniform system of typographical arrangement. The result is a considerable, though unequal, improvement as to detail, and the only drawback is the occasional omission of a genus, expelled from one Order by having been improperly associated with it, and not taken up by the author of that one to which it should be referred. But these cases are few; nor are they of so much importance in a "*Species*;" for such a work must now be much too bulky to dispense with the use of a *Genera Plantarum*, where repeated references to anomalous genera slightly connected with various orders can more easily be given. In a *Species Plantarum*, the anomalous genera are best placed at the end of the classes or large groups to which they certainly belong, with a mere reference from those orders to which they have been or are likely to be assimilated.

In the two volumes before us, Professor Alphonse De Candolle, editor of the whole work, is himself the author of the *Myrsinaceæ*, *Sapotaceæ*, *Ebenaceæ*, *Apocynaceæ*, *Loganiaceæ*, and some other lesser Orders, and has revised his father's manuscripts of the *Oleaceæ*, *Jasminaceæ*, *Bignoniaceæ*, *Boraginaceæ*, (in part published), and a few small Orders;

St. Hilaire, as to the Brazilian species. There are but three genera, easily distinguished from each other; but the numerous species of *Utricularia* are rendered more difficult by the excessive delicacy of their flowers, making it often scarcely possible to describe them accurately from dried specimens. De Candolle's first divisions of the genus are derived chiefly from the remarkable differences in the organs of vegetation, and, in good specimens, are only attended with one rather singular inconvenience, the difficulty of distinguishing between their roots and leaves. Taking all these drawbacks into consideration, De Candolle's characters very much facilitate the determination of those *Utriculariæ* (above 100 species) which he was enabled to describe; but there are many in our herbaria which he did not then possess; amongst others the splendid U. *Humboldtii*, figured in the 15th vol. of the Transactions of the Berlin Horticultural Society.

The materials of which Prof. Alph. de Candolle has chiefly availed himself for those Orders which he has elaborated are, besides his own very rich botanical library and extensive herbarium, those of MM. Edm. Boissier and Phil. Dunant, of Geneva, both of which, and especially M. Boissier's, are now becoming very important. Amongst the collections generally distributed, to which Prof. de Candolle is thus enabled to make special reference, so as to facilitate the arrangement of those herbaria which also contain them, may be mentioned very full sets of those of Berlandier from Mexico, Salzmann, Blanchet, Lund, and generally of Martius from Brazil, A. Gay and Bertero from Chile, and more or less perfect sets of those of Schomburgk from British Guiana, Leprieur from French Guiana, Hostmann from Dutch Guiana, Gardner and Vauthier from Brazil, Andrieux from Mexico, Mathews from Peru, Hartweg from Mexico, Guatemala and Columbia, Heudelot from tropical Africa, Drège and Krauss from South Africa, Bojer from Madagascar and Mauritius, Cuming from the Philippine Islands, Kotschy and Schimper from N.E. Africa, Zollinger from Java, and a set, in some cases complete, in others considerable, of the East Indian herbarium distributed by Wallich, besides a great number of either less important collections or named ones, which are quoted for all but common species, and even in these the numbers of the unnamed collections are generally given. The value of these unnamed but numbered sets is thus very considerably enhanced, and it would be of great use to science, and very advantageous to the interests of collectors, if they were to transmit to Prof. de Candolle, complete sets of those portions of their collections, which are not yet contained in the Prodromus.

The *Primulaceæ* by M. Duby (editor of De Candolle and Duby's "Botanicon Gallicum") follow the *Lentibularieæ*; they had long been the object of his special study, so far as other avocations permitted, and residing at Geneva, he could avail himself of the materials possessed by DeCandolle; so that whatever may be the opinion of local botanists on the limits he may have ascribed to some of the much contested species of *Primula*, *Cyclamen*, etc. the enumeration he has here given will be found to afford a natural distribution and intelligible characters both for genera and species. Excluding the two doubtful plants or rather riddles of Mr. Bowditch, mentioned at the end, the Order consists of twenty-three genera (numbered by a misprint as 21), and among them the only two of de Candolle, several years since, on the occasion of receiving for publication a complete set from the East Indian herbarium distributed by Wallich. The result of his researches was then published in an excellent paper (the prefatory part written by himself in very good English) printed in the 17th vol. of the Transactions of the Linnæan Society, and on taking up the Order again for the *Prodromus*, he published two additional memoirs in the " Annales des Sciences Naturelles," of Paris, vol. 15 and 16 of the second series. The chief alterations now made, are, an increase in the number of genera, and the separation as distinct orders of *Ægicera* and of the *Theophrasteæ*. Additional genera were perhaps rendered necessary by a corresponding increase in the number of species known, and by the more accurate discrimination of those previously established, which he has been enabled to make by means of better or additional specimens. But here much remains still to be done, two hundred and fifty species, distributed into seventeen genera, form the tribe of the *Ardisieæ*, which is so natural that, were the species less numerous, they might well have been considered but as a single genus, and consequently the generic characters, independently of inflorescence, are often difficult to appreciate, by one less accustomed than himself to examine them. They are given with great accuracy of detail, but, being very long, might have been rendered much easier by a short summary, or some indication of the most important points to be observed, as is done in the last of the above mentioned memoirs. The new characters introduced by the author, especially those derived from the œstivation of the corolla, are generally important, it is doubtful however whether farther investigation may not show that too much reliance is placed on the number of parts of the flower, and even on the number of ovules. A good subdivision and distinction of species in the genus *Myrsine*, are also still a desideratum.

The separation of *Ægicereæ* and *Theophrastaceæ*, as distinct orders, must be regretted. There is no greater inconvenience attending the practical use of the natural system, than the modern habit of multiplying small orders consisting of a very few species. The *Ægicereæ* have here but five species, and the *Theophrasteæ* no more than twenty-nine, both are nearer to *Myrsineaceæ* than to any of the succeeding ones, and with them might, easily have been distinguished from others by a common character, their present ordinal characters being in that case considered as those of suborders. This course would, systematically, have been quite as correct, and much more practically convenient. Indeed, were it not perhaps that we are not in the habit of associating our humble *Primroses* with anything arborescent, it might have been a more natural plan to have included them also in a distinct suborder of the same group, which would then have been marked by a character perfectly distinct and easily ascertained, and the *Lentibularieæ* would then have borne the same relation to them that *Scrophularineæ* do to *Solanaceæ*; nor would the association of *Primulaceæ* and *Myrsinaceæ* have been at all more unnatural than that of *Viola* and *Alsodeia*, or of any herbaceous with arborescent genera, which occur in most large orders.

Next come three very distinct orders with a pluricarpellary (very seldom bicarpellary) ovary divided into cells, and an axile placentation: *Sapotaceæ*, approaching *Myrsineaceæ*, by

Rostellaria) distinguished in the first place by the relative number and position of the stamens, the lobes of the corolla and the petaloid scales, characters in some cases artificial, but in so natural an order not the less useful, as being generally clearly defined and easy to be seen. Even characters derived from the seed (for instance the abundance or absence of albumen which separates *Sersalisia* from *Sideroxylon*, *Dipholis* from *Bumelia*) in most cases of great importance, would appear here to be artificial; that is, unattended by any other perceptible generic difference, and consequently, where the seed is unknown, the genus is uncertain. Possibly when the structure of the seed shall have been ascertained in a greater number of species, some corresponding differences may be detected in other respects; in the mean time, it is productive of no small practical inconvenience to divide a natural genus into two by a character which has only been observed in a small proportion of the species. The establishment of sections might have answered the same scientific purpose and obviated the evil of having so many species with doubtful names.

Of the eight genera of *Ebenaceæ* three are new, all well distinguished, and in these instances, as well as in that of most newly established or defined genera in orders worked up by Alphonse de Candolle, besides the detailed character (sometimes rather long), a few very useful words are added, pointing out the most striking points in which they differ from other genera with which they are likely to be confounded. *Diospyros* itself, consisting of seventy-three species, besides twenty-three less known, is divided somewhat artificially, but that was the only course to be pursued under our present imperfect acquaintance with many of the species.

Styracaceæ, after weeding out many heterogenous plants which had at different times been associated with them, have become, under Prof. De Candolle, a small but natural and well defined order. The affinities with *Ebenaceæ*, *Humiriaceæ* and *Alangieæ* are well pointed out; the connexion with *Olacaceæ* is perhaps not so close, on account of the remarkable structure of the ovary in the genuine genera of that order. The various groups often separated from *Symplocos* are here very properly referred back to it as sections, and the two principal genera, *Symplocos* with fifty-six species, and *Styrax* with forty-five, from being amongst the most confused are now amongst the best defined, although our collections already contain a considerable number of additional species. In the ordinal character there is a slight omission, that of any allusion to some of the anomalies of *Pamphilia*, especially the reduction of the number of stamina to five.

Oleaceæ and *Jasminaceæ* form together a small group (formerly and perhaps more conveniently considered as one order) distinguished amongst *Corollifloræ* by the stamens constantly reduced to two, regularly inserted with relation to the bicarpellary ovary (alternating with the carpels ?) and not in relation to the divisions of the corolla, unless where, as in *Oleaceæ*, this is tetramerous; and also regular in its relation to the ovary, whereas in all the succeeding orders, when any reduction takes place, the remaining stamens are irregularly placed with reference to the ovary, which is neither opposed to nor alternating with them. These Orders were prepared by the elder De Candolle in 1840 (or early in 1841 ?) from the materials he possessed at the time, and a few notes with two by their milky juice, their regular isomerous flowers, the contorted or valvate æstivation of the corolla, the bicarpellary pluriovulate ovarium, with a placentation never truly axile, besides the opposite exstipulate leaves, the ovaries distinct at the base of the style, with the styles joined at the apex, the follicular or baccate fruit, and several other characters which, though not without exception, are so prevalent in the two orders as generally to enable the botanist to recognise them at first sight. They are separated from each other on account of the singular structure of the stamens in *Asclepiadaceæ* which does not exist in *Apocynaceæ;* moreover, the corolla is generally valvate in the former, always contorted in the latter.

The *Apocynaceæ*, by Alphonse de Candolle, contain ninety-four genera (besides two doubtful ones) of which twenty-three are here first established. The generic characters are given with accuracy and detail, and are taken chiefly from those organs, whether reproductive or vegetative, which have appeared in each case the most constant, without so much reference to preconceived notions of the absolute importance of certain modifications as is too frequently the case; the characters have moreover been carefully verified in all the species of which the author possessed specimens, and the general principles which guided him are fully explained in a memoir published in the first vol. of the third series of the Annales des Sciences Naturelles. We have thus a complete concise and satisfactory monograph of the order brought down to the commencement of 1844, and singularly facilitating the determination of its species.

The principal division of the order is taken from the degree of coalition of the ovaries, and the presence and situation, or absence, of a coma or tuft to the seed; the latter character has the inconvenience of being observable only in the ripe fruit which is seldom to be seen in herbaria, but M. de Candolle has satisfactorily shown in his memoir, that it is the best which has yet been proposed. He there gives the following synopsis of his seven tribes which would have been usefully placed in the Prodromus.

Semina calva,	
Ovarium unicum uniloculare. .	Tribe 1. *Willughbeiæ.*
Ovarium unicum biloculare. .	Tribe 2. *Carisseæ.*
Ovaria duo distincta.	Tribe 3. *Plumerieæ.*
Semina comosa,	
Ovarium unicum biloculare. Semina superne comosa. . . .	Tribe 4. *Parsonsieæ.*
Ovaria duo distincta. Semina inferne comosa.	Tribe 5. *Wrightieæ.*
„ „ Semina utrinque comosa.	Tribe 6. *Alstonieæ.*
„ „ Semina superne comosa.	Tribe 7. *Echiteæ.*

With regard to the affinities, there is one excellent principle mentioned in the memoir (p. 255) which, however, appears to us rather too absolutely stated, " Si vous ne pouvez pas dire en quoi deux familles se distinguent d'une manière permanente et universelle, ces deux familles n'en font qu'une : deux terres qui se touchent forment une île, et non deux îles ; tandis que deux terres séparées par un bras de ready observed, is excellent, and if properly attended to would prevent much of that multiplication of petty orders, which only tends to confusion.

In the special case before us, it is remarkable how easy it is to distinguish one of the orders nearest allied to *Apocynaceæ*, the *Gentianeæ*, without either Grisebach or Alph. de Candolle, than whom none could have better investigated the matter, having been able to detect a single constant tangible character, except the milky juice of the former, and the bitter taste of the latter, a physiological difference which may affect colour or other points, which the eye can appreciate, but the pen cannot delineate. The relation to *Loganiaceæ* will presently be adverted to.

Amongst the generic characters hitherto little attended to in *Apocynaceæ*, considerable assistance has here been derived from the modification of the calycine glands and nectarium, and the twisting of the corolla, whether from left to right or from right to left, which is shown to be often, though not always, constant in genera, and nearly so in the tribes.

The *Asclepiadaceæ* had been for several years studied by Decaisne and some excellent papers were published by him in the Annales des Sciences Naturelles for 1838. The nice and complicated characters furnished by the sexual apparatus in this order are well known from the valuable works of Robert Brown. The extreme difficulty of ascertaining them in dried specimens may be at once experienced by any one who attempts their determination, who will readily appreciate the tedious labour of examining specimens more or less numerous of almost eight hundred species (out of near one thousand enumerated), which has been done with the greatest care and accuracy on the present occasion by Decaisne. His materials were the rich collection in the Museum du Jardin du Roi, at Paris, together with the *Asclepiadeæ* from De Candolle's herbarium, transmitted to him from Geneva, and some species from the herbaria of Benj. Delessert, P. B. Webb, and G. Bentham. He had thus at his disposal the most important of the collections above mentioned as made use of by De Candolle, and besides valuable authentic specimens of old species, nearly complete sets of Blume's Javanese and Galeotti and Linden's Mexican plants received by the Museum from Holland and Belgium.* He had also access to the most complete botanical libraries in existence; and when we consider in addition to these advantages, the high authority of Robert Brown, whose principles the author generally follows, his own well known scientific views, ability and accuracy, and his admirable talent for botanical delineation, we should think it vain to attempt a criticism of his work without having followed him through it step by step. And if on taking up an Asclepiadeous plant to determine, we are alarmed on observing in this very natural order, one hundred and thirty-three genera, of which many appear to us exactly alike in habit, inflorescence and general aspect of their minute flowers, and are tempted to exclaim against them as artificial and fanciful, we may at least rely upon their definitions being accurate, and provided we do not fail in our own powers of observation, we shall be safely led to the genus we are in search of.

The *Loganiaceæ* (partly by the elder De Candolle, partly by his son) with which the ninth volume commences, present, at first sight, an anomalous assemblage of genera, expelled from other orders; but, if we strike out three or four genera, distance from *Apocynaceæ* is really greater, though not so easily defined, the absolute character must be drawn from the strictly valvate æstivation of the corolla in some genera, from the presence of interpetiolar stipules in others, and, in all, the placentation is much more, if not absolutely, axile. There is also no follicular fruit, and probably no milky juice. The connexion with *Gentianeæ* need scarcely be adverted to, because it only exists through the *Apocynaceæ*.

Three genera, *Polypremum*, *Lachnopylis*, and *Gelsemium*, must, however, absolutely be excluded; the first, *Polypremum* has the æstivation of the corolla imbricate, not valvate, it has been placed by some among *Rubiaceæ*, but the ovary is entirely free, and we see no one character, by which it can be distinguished from *Scrophulariaceæ*. The structure of the flower is very near that of *Microcarpæa*, and as in that genus and the whole of the *Buddleieæ*, the leaves are connected by a membrane which in some species of *Buddleia*, expands into a foliaceous appendage very like a stipule, if not a real one. *Lachnopylis* has not been seen by us, but from the character given, we have little doubt that it is the same as *Nuxia*, an undoubted *Scrophulariacea*. *Gelsemium* has been singularly unfortunate; anomalous enough in itself, it has been thought still more so from the mistake made by Fenzl (and pointed out by De Candolle) in describing for its fruit, the follicles of an *Apocynum*, which had been distributed with the flowering specimens of *Gelsemium* in Drummond's New Orleans (1833) collection. The placentation in this genus is axile, the æstivation of the corolla is imbricate, and differs only from the most common form of bilabiate imbrication, by having one of the upper lobes overlapped on one side by one of the lateral lobes, instead of having both the upper lobes outside of all; in habit and many other characters, it is also not unlike the tribe *Cheloneæ* of *Scrophulariaceæ*, but the five perfect equal stamens are very unusual in that order, and the quadrifid apex of the style is not known to exist in any one of its numerous genera. It must, therefore, be rejected as an anomalous genus (or rather plant, for there is but only species) differing from all the great corollifloṛous orders, but much nearer to *Scrophulariaceæ* than to any other.

The anomalies of *Usteria* and of the *Potalieæ* are singular, but do not interfere with the technical limitation of *Loganiaceæ* and the habit of *Potalieæ* is very near that of *Fagræa;* that of *Usteria* is unknown to us. Including these genera and all the remaining genera of the Prodromus (except the two last doubtful ones) we shall find the axile placentation, free ovary, valvate or contorted æstivation, with interpetiolar stipules, constant in the latter case, though sometimes evanescent with the valvate æstivation, good characters to distinguish the order from its allies, and affording exceptions only in a very few species of one genus, which is unfortunately that which gives its name to the order. One species of *Logania* has no stipules, and it appears that the æstivation of the corolla which we have generally observed to be contorted is not always so; still the genus is too natural a one to be broken up, the stipules and contorted æstivation are too prevalent for it to be referred to *Scrophulariaceæ,* and this must be considered as the narrow isthmus which connects the latter order with the remainder of the *Loganiaceæ,* and through them with *Rubiaceæ.*

The ovary and fruit of *Loganiaceæ* afford nearly all the varevision up to Feb. 1843 of the excellent monograph of that order published by him 1838,* from the ample materials contained in his own and other German herbaria, as well as Sir W. J. Hooker's rich collection, of which he had the loan, and it is only to be regretted that through his conscientious activity in remitting his MS. by the time originally stipulated, he had not the means of including some of the later received collections, quoted in other parts of the volume. Taking the two works together, the exposition of the structure, affinities, geographical distribution and systematic arrangement, show so thorough an acquaintance with the subject, and views so sound, as to leave but little to remark on them. The only thing to be regretted is perhaps too great a multiplication of genera. In a very natural order like *Gentianeæ*, the characters by which it can be divided become necessarily so much the less important as well as more difficult to appreciate. Some of those even on which the primary divisions are based, the deciduous or persistent style, the presence or absence of a connectivum, require nothing less than the experienced eye of the author to ascertain them with precision, although the general arrangement resulting from their adoption appears unexceptionable.

Amongst the species we may observe that Grisebach must have received a wrong plant for *Exacum sulcatum* Roxb.; at least specimens, so named by Roxburgh, have the anthers as described by him in the Flora Indica, and are not different from E. *pedunculatum*; *Eustoma* (*Urananthus*, Benth.) *chironioides* is probably a *Gyrandra*; *Coutoubea lutea*, Steud. (p. 562 of the Prod.) is an accidentally aberrant form of C. *densiflora*. As to *Voyria nuda*, it is surprising Grisebach should have overlooked the strange anomalies described and figured by Splitgerber; the alternate (squamiform) leaves, the simple perianth, the position of the stamens, the structure of the capsule and seeds are totally unlike anything else in *Gentianeæ*. If (and it is a likely mistake to make in examining so very delicate a plant without sacrificing several specimens) Splitgerber has only miscounted the number of parts of the flower, and that there are really six instead of five, then we have a Burmanniaceous plant, very near *Apteria*, of which there are several in similar situations in tropical America.

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* For commercial reasons, the publisher post-dated this work, "1839." The manuscript was dismissed from the author's hands before the middle of 1838, and the work had actually reached the London booksellers, near a month before the close of 1838.

The differences in habit between *Ophelia* and *Swertia* are said not to exist by those who have seen them growing, and since there are exceptions to all the other distinctive characters, even to that derived from the style, the two genera must probably be reunited.

The three next orders, *Bignoniaceæ*, *Sesameæ* and *Cyrtandraceæ*, by the elder De Candolle, with notes and additions by his son, are perhaps rather out of place here; but as there is great difficulty, not to say impossibility, in arranging the monopetalous orders in a natural linear series, it was considered on the present occasion preferable to publish what were ready for the press in some kind of order, though not the best that could have been suggested, rather than wait till the whole of the orders were finished, which alone could have given an opportunity of combining them in the best manner. There is no doubt, however, that the group now in question

Scrophulariaceous or axile group, the four placentæ are united together in the centre of the ovarium, whilst in the *Bignoniaceous* or parietal group, they are more or less removed from the centre in pairs, the interval being either empty or occupied by a spurious cellular dissepiment. This distinction is of little or no importance in some calyciflorous orders, while among *Corolliforæ* it appears to be usually connected with great general differences.

The main difficulty experienced by De Candolle in the *Bignoniaceæ* consisted in the very imperfect state in which specimens are usually sent home by collectors. Most of the species are large climbers, which attract the notice of travellers by their handsome flowers, but are difficult to gather or to dry well when gathered, and the fruits are generally entirely neglected, or what is worse, mismatched. Yet it is the fruit and seed which appear to afford the best characters, and are accordingly endeavoured to be made use of for the demarcation of the tribes and genera. Unfortunately, however, after establishing genera from the structure of the fruit of one or two species, the author has been obliged to associate with them many other species from similarity of aspect, and notwithstanding the excellent eye for a natural group possessed by the late Professor De Candolle, it is probable that considerable alterations will hereafter require to be made in the circumscription of several of the genera: we have not indeed as yet sufficient data to determine satisfactorily the validity of the primary divisions derived from the dehiscence

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these plants the placentæ proceed from an elongation of the floral axis, or from the inflexed margins of the carpellary leaves, for however we might in the case of some of these orders (or perhaps only in some genera) incline to the former opinion, much sound argument may also be adduced on the other side; and practically speaking, for systematic purposes, the decision is of little or no importance. Under both theories, the placentæ must be admitted to be always double in number to the carpellary leaves, often intimately connected with each other (with or without the intervention of a central column), and with the margins of the carpellary leaves or with the latter only—or, as the fruit ripens, more or less detached or detachable.

of the fruit, and the number of rows of seeds on each side of the dissepiment.

Among the more special observations which have occurred to us are the following: from *Bignonia* (which is still a receptacle for every species that will suit no other genus, and consequently remains yet to be defined) it is probable that all simple-leaved species will have to be excluded. B. *castaneæfolia* is most likely the *Tecoma Gaudichaudi*, so common about Guayaquil. B. *obovata* is an apocyneous plant. *Pachyptera* can scarcely be yet considered as a genus, being established upon two fruits without flower, to which are added four species of which the fruits are unknown, no generic character being given which can show any reason for their being so included. The *Delastoma latifolium*, described by Splitgerber, appears to us to be the same species as *Tabebuia rufinervis*. If the glands on the calyx and general habit of *Adenocalymna* indicate a real genus, it will not be confined to South America, an unpublished species having been sent from Port Essington, in tropical Australia. The digitate-leaved *Tecomæ* and *Tabebuiæ* are probably congeners, and very different from the simple and pinnate-leaved tree *Tecomæ*. *Spathodea* is at present an equally heterogeneous an assemblage with *Bignonia* itself. *Platycarpum*, only known *rineæ* and *Verbenaceæ* respectively bear to *Scrophulariaceæ*. These two genera cannot, therefore, be included in *Sesameæ* without interfering too much with the ordinal character; but whether they should prove to be the nucleus of a small distinct order, or whether (which is more probable) they ought with *Myoporineæ* to be included among *Verbenaceæ*, can only be determined when the latter order shall be completed.

The *Cyrtandraceæ* were prepared by De Candolle before the appearance of Brown's Memoir (in Horsfield's Pl. Jav. Rar.), but his son has made additions derived from that source as well as from what few materials he had since collected. Unfortunately he appears to have possessed very few of the published species, and Brown had only enumerated species in some of the genera; so that, for our herbaria, this order is still incomplete, in this respect. The genera included in Brown's paper are, of course, well defined, but there are six at least upon which we have not his opinion, viz: *Conandron* and *Napeanthus*, published since his paper, *Rehmannia* and *Isanthera*, which had been described erroneously as having bilocular ovaria, and therefore his attention was not called to them, and *Ramondia* and *Haberlea*, both known to him, but excluded from *Cyrtandraceæ* for reasons which we cannot but regret he has not published.

Recurring to the general arrangement of the orders we have just now been viewing,—were the structure of some anomalous *Orobancheæ* but better known to us, we should not hesitate in suggesting the formation, under the name of *Bignoniaceæ*, of one large Order, of which *Bignonieæ*, *Crescentieæ*, *Orobancheæ*, *Gesnerieæ*, *Cyrtandreæ* and *Sesameæ* would constitute so many tribes. This order and *Scrophulariaceæ* consisting, the one of about 1000, the other of about 1800 species, would then be alike in the structure of the flower, but different in the placentation; they could in all cases be distinguished from each other in flowering specimens or in fruit, and would also always be known from the allied orders when in flower, and in most cases when in fruit.

Hydrophyllaceæ, by Alphonse de Candolle, are placed next, because of having a bicarpellary unilocular ovarium with the placenta either parietal, or at any rate not in the axis, and a flower more allied to the *Convolvulaceæ* and *Boragineæ* than to the preceding orders. From an observation in p. 564, it appears that had he sooner observed them, he would have included the greater portion, if not all *Hydroleaceæ* in the present order; and it would appear correctly so; but too great faith has been hitherto placed upon Choisy's monograph, who distinctly states that all the genera have a bilocular ovary, whereas De Candolle finds it always unilocular, except in *Hydrolea* itself, where the dissepiment is of the same nature as that of *Bignonia*.

In the details of the order the author has carefully revised the monograph published by G. Bentham in the 17th vol. of the Linnæan Transactions, made several corrections and additions, and attaching generic importance to the presence or absence of the squamæ in the tube of the corolla, has established three new genera, the validity of which remains perhaps yet to be tested.

The *Polemoniaceæ* had, perhaps, been better placed between *Boragineæ* and *Solanaceæ*. They are, however, anomalous among *Corollifloræ* by the constancy (unless in accidentally abnormal flowers) of the tricarpellary ovary. They possess *pensis* does from *L. Cliffortiana*, by the ovary scarcely adherent, though not wholly free.

The two last orders in the volume, *Convolvulaceæ* and *Boragineæ*, belong, as to placentation, to the same group as *Labiatæ*, and perhaps some other orders not yet published, having a bicarpellary (rarely tricarpellary) ovarium, with two collateral ovules in each carpel; the ovary being sometimes unilocular, but more frequently divided by more or less complete dissepiments, either between the carpels only, or transversely also between the ovules. The dissepiments, when they exist, are generally, if not always, free from the ovules which have an independent insertion; thus affording a strong argument to those who advocate the attachment of ovules to a prolongation of the axis, and not to the margins of the carpellary leaves.

The *Convolvulaceæ*, by M. de Choisy, are the least satisfactory portion of the volumes before us. The author, working at Geneva, had the full command of De Candolle's materials, including several sets of *Convolvulaceæ* communicated expressly for his use; he was known to have applied himself for many years with great zeal to their study, and we had confidently expected to have seen the confusion which has prevailed over the extensive genera of that order, in a great measure dissipated; but we have been disappointed. There are great difficulties, it is true, arising from the number of similar-looking but very distinct species, as well as of dissimilar forms assumed by one and the same species, from the very incomplete specimens usually sent home by collectors, and from the unusually large number of species imperfectly or incorrectly described; yet, if we are authorized in asserting that many of the genera as here circumscribed are not natural, that they contain species which do not agree with the artificial character given, that some of the more important characters are incorrectly expressed, that the principles adopted are often unphilosophical, we may well add that the monograph of *Convolvulaceæ* remains to be done. We would further express a hope, that when that is at length accomplished, it may not be necessary to beg the reader who has an *Ipomæa* to determine not only "ut patienter inter plures sectiones investigationes suas dirigat," but, when he has laboured through the diagnoses of 282 species, "sin plantam suam inter *Ipomæas* reperiat, quærat inter *Argyreias*, (35 species), quærat inter *Jacquemontias* (18 more) forsan felicior erit." The author might have added,—if luck does not yet assist him, he may still have a chance among a hundred other species, distributed into a dozen so-called genera.

A few details taken from the species which we have had occasion to examine, will, we fear, bear us out in these statements, which we confess, we should much rejoice to see refuted.

With regard to the general division; *Cuscuta*, no doubt, forms a distinct tribe, and the deeply-lobed ovary of *Dichondra* and *Falkia*, analogous to that of *Labiatæ*, is also a sufficient distinction to justify their separation as a tribe, though so very small a one. There exists also a considerable difference between the berry of *Argyreia* and the capsule of *Ipomæa*, but we doubt much if the consistence of the fruit can distinctly—and certainly it cannot naturally—separate the two first tribes of *Argyreieæ* and *Convolvuleæ*. Species belonging to the two tribes are often so similar that they can bus 2. Stylus divisus aut styli plures." In the first subtribe, however, we have several *Poranæ*, with a style confessedly semi-bifid, and some *Convolvuli* in which it is really so, whilst in the second, there is also *Breweria*, where the style is described as "1, semi-bifidus;" and the two subtribes thus characterized, are therefore not distinct. The fact is, sufficient attention has not been paid to what portion of the style is or is not stigmatic. The bifurcation of the style is more or less apparent in the great mass of *Convolvulaceæ* (as well as of a great many other bicarpellary orders); in numerous cases it is only so at the summit, and the very short branches are entirely covered with the stigmatic papillæ. In these instances the branches of the style and the stigmata are synonymous terms; in most *Convolvuli*, however (as well as in several *Jacquemontiæ*, and perhaps a few *Ipomææ*), the papillæ cease at some distance (however small) from the bifurcation, when it manifestly becomes incorrect to designate the style as simple with two stigmata; and since the order of *Convolvulaceæ* exhibit a great diversity in the form of the stigmatic surface and the proportion it bears to the branches or to the whole style, and as from these variations some of the best generic characters are derived, it is most essential that whatever nomenclature be adopted, it be at least correct and precise.

The third and last division, also expressed with true Linnæan brevity, will still less bear a close scrutiny. Divisio 1, (subtribus 1), ovarium 3-4-loculare. Divisio 2, ovarium 2-loculare. Divisio 3, ovarium 1-loculare aut junius tantum 2-loculare. From what has been above said of the nature of the transverse dissepiments in *Convolvulaceæ*, they being merely cellular expansions between the collateral ovules of each carpel, we might almost predict, à priori, that they would prove of little importance; and we find not only that they are present or absent in species which can scarcely otherwise be distinguished, but that they, like other so-called spurious dissepiments, are often incomplete, the transverse section of the upper portion of the ovary showing it to be four-celled, whilst in the lower part it is two-celled only. This I have observed in several species of Choisy's *Batatas*, and he himself admits it in *Calonyction*. That the absence of the dissepiment between the carpels in some convolvulaceous fruits is of no greater importance, is proved by Alphonse de Candolle, who (in a note, p. 463 of the same vol.) states that the supposed unilocular ovary of *Porana* and *Shutereia* at least, is in fact bilocular.

The only real difference with regard to the ovary lies in *Pharbitis*, where there is an additional carpel with its two ovules, and sometimes it would appear, two additional ones. Whether or not this character be found sufficiently constant to retain the genus (for it is variable in some species), it cannot at any rate be placed in the same category as the developement of a spurious dissepiment between the seeds.

Attaching, however, no more than generic importance to all these modifications, and considering it necessary to adopt them, if not as natural, at any rate as artificial distinctions, in so very numerous a group of species, they may be useful or even the most useful, provided (in the absence of all vegetative characters), they really exist in the species supposed to possess them; but even in the few *Convolvulaceæ* we have had leisure to compare, we have found several (and those well known to the author by specimens or good figures), arranged

Batatas, which has a four-celled ovary, and reduced to the common *B. acetosæfolia*, only found in maritime sands.

Ipomæa purga, Wender, well known by good descriptions and by Zuccarini's figure, quoted by Choisy (we have not seen Nees's figure), possesses a hypocrateriform corolla and exserted stamens. It is placed in *Ipomæa*, of which part of the character is "Corolla campanulata, stamina inclusa."

This same genus *Ipomæa*, "nunc, speramus, stricte definitum," of which the corolla is stated to be "campanulata," without any explanation or exception, is made to include twenty-six species "corolla tubulosa" (one of them, *I. pilosa*, has it in fact remarkably broadly campanulate), ten species "corolla infundibuliformi," six "corolla tubuloso-infundibuliformi," besides innumerable others with a long tube, a hypocrateriform limb, an inflated, ventricose or urceolate tube, &c., which may all be modifications of the campanulate; but to be intelligible as such, the generic character would surely have required some explanation.

Moorcroftia is admitted as a genus, from an innate conviction of the author that it is a genus; the reasons for which he does not impart, as it confessedly waits for a character.

The subdivisions of *Ipomæa* and *Convolvulus* are derived chiefly from the duration of the plant, the volubility of the stem, and the form of the leaves, the most uncertain of all characters; whilst the striking variations in the calyx, the anthers, &c., are neglected.

We must, moreover, protest against the constant use of positive dimensions in the specific diagnoses, especially when drawn from those parts of the plant most subject to variation in this respect.

Passing over the anomalous genus *Erycibe*, which we regret to see established as an order (on account of the few species it contains), but which we have not had leisure to examine, we come to the *Boragineæ* from De Candolle's manuscripts, but enriched with additions and most important notes by his son. On revising his father's papers for the press, he re-examined a considerable number of species, was enabled to correct some errors that had crept into the manuscript, and considerably to modify and improve the generic and sectional characters, chiefly by the introduction of those modifications in the æstivation of the corolla, which had previously been little attended to or wholly neglected. The principles which have guided him have, we believe, been explained in a paper read at the scientific meeting at Milan, last autumn. Since we have not yet seen this memoir, and a considerable portion of the *Boragineæ* remains yet to be published, we defer any further observations till the appearance of the tenth volume.

In conclusion, we must congratulate Professor Alphonse de Candolle on his success in following his father's footsteps, and on the improvements, both scientific and practical, which he has introduced into this important work. Whatever we have said in praise or dispraise of particular portions of it, has been the result of impressions received during the hitherto partial use we have made of it. We have no doubt that had we had time and ability to follow the respective authors through the whole of their tedious labours, we should have found many more grounds for commendation, and might probably on the other hand, have seen reason for softening down the apparently severe remarks we have on some occasions stand, a stout octavo volume, full of wood-cuts, illustrative of the Natural Orders. Such a book was much needed by the botanical student, and few persons are so competent to the task as Dr. Lindley.

ALGÆ ANTARCTICÆ, *being characters and descriptions of the hitherto unpublished species of* ALGÆ, *discovered in Lord Auckland's Group, Campbell's Island, Kerguelen's Land, Falkland Islands, Cape Horn and other southern circumpolar regions, during the voyage of H.M. discovery ships "Erebus" and "Terror;" by* DR. J. D. HOOKER *and* W. H. HARVEY, ESQ. M.D.

MELANOSPERMEÆ OR FUCOIDEÆ.

1. Durvillea *Harveyi*, Hook. fil.; radice e fibris crassis demum anastomosantibus constante, stipite perbrevi valido compresso in laminam subsolidam coriaceam apice laciniatam gradatim attenuato.

HAB. Hermite Isl., Cape Horn and the Falkland Islands.

A very distinct species, which may readily be recognised by the fibrous root, that of *D. utilis* being always scutate. The frond is of a much thinner texture (though covered with fructification) and never, even in its largest state, has been found incrassated or filled with transverse inflated cells; it often attains a length of six feet and upwards.

2. Desmarestia *chordalis*, nobis; fronde coriaceo-cartilaginea compressa anguste lineari tri-quadripinnata, pinnis pinnulisque longissimis oppositis distantibus apice longe nudis, pinnulis sæpe alternis elongatis inermibus chordiformibus.

HAB. Christmas Harbour, Kerguelen's Land.

This forms a verdant mass under the sea in 2-5 fathom water, growing on the rocks. The fronds are several feet in length, a line or a line and a half in diameter in the principal stems, and half a line in the pinnæ. The long whip-like naked apices of the branches are a very striking specific character.

3. Desmarestia *Rossii*, nobis; fronde coriaceo-cartila-

ginea compressa lineari bi-tripinnata circumscriptione anguste lanceolata, pinnis pinnulisque omnibus oppositis basi apiceque attenuatis acutis erectis v. ultimis appressis margine integerrimis.

Hab. Falkland Islands, abundantly, and Hermite Island, Cape Horn.

Fronds many feet in length, of a singularly narrow-lanceolate outline, bipinnate in the lower and upper part, triply pinnate in the middle. Stems 2-3 lines in diameter, branches 1 line, all remarkably tapering to the base and apex, and all inserted at a very acute angle, so as to be nearly erect. It most resembles a very narrow form of *D. ligulata*, but is of a much coarser and thicker texture. Besides these new species, *D. ligulata*, *media* and *viridis*, were found abundantly in the Antarctic Seas.

4. Dictyosiphon *fasciculatus*, nob. *in Flor. Antarct.* v. 1, p. 178, t. 69, f. 1.

Hab. Lord Auckland's Group.

Stereocladon, *Nov. Gen.*

Frons solida, olivacea, filiformis, ramosissima, e cellulis endochromate repletis longitudinaliter seriatis formata. *Spori-*

siphon fœniculaceus, but the stem and branches are solid throughout, and the seeds are immersed endwise, in the substance of the branch.

6. Adenocystis *Lessonii*, nobis *in Flora Antarct.* v. 1, p. 179, t. 69, f. 2.

HAB. Cape Horn, Falklands, Kerguelen's Land, Lord Auckland's Group, Campbell's Islands, and in the sea at Cockburn Island.

7. Sphacelaria *obovata*, nobis; pusilla, stupâ nullâ, fronde circumscriptione obovata, caule tenui articulato basi longe nudo in parte superiore ramis elongatis crebris erecto-patentibus laxe pinnatis distichis ornato, apicibus sphacelatis.

HAB. St. Martin's Cove, Cape Horn, in deep water only.

Fronds 1-1½ inches high, very slender, articulate throughout. If our specimens be fully grown their outline is sufficient to characterise the species.

8. Mesogloia *linearis*, nobis; virescens, circumscriptione linearis, caule indiviso tenui, ramis abbreviatis flexuosis crebris alternis, ramulis subsecundis.

HAB. St. Martin's Cove, Cape Horn.

Fronds 4-6 inches long, ¼ line in diameter, pale olive green. Stem undivided, but densely covered throughout with short flexuous branches, which are from ½ inch to an inch long, and either naked or sparingly furnished with ramuli, which generally issue from their lower or outer margin in a secund manner. The filaments of the periphery are moniliform, and not much protruded beyond the gelatine.

RHODOSPERMEÆ or FLORIDEÆ.

9. Delesseria *dichotoma*, nobis in *Flora Antarct.* v. 1, p. 184.

HAB. Lord Auckland's Group.

10. Ectocarpus *geminatus*, nobis; cæspite basi intricato olivaceo v. virescente, filis (majusculis) tenuibus ramosissimis apice liberis plumosis, ramis ramulisque patentibus oppositis v. quaternis ultimis brevibus, utriculis conicis

sessilibus oppositis basi sæpius ramulo brevi bracteæformi fulcratis.

Hab. Cape Horn and the Falkland Islands.

A beautiful species, 4-5 inches long, having the habit of *E. granulosus*, but amply distinguished by the constantly opposite, sessile, conical capsules, or utricles, very generally subtended by a minute ramulus half their own length. The main branches are frequently in fours; the ultimate very short ramuli, are constantly opposite, and issue at an angle of 75° or 80°. Besides the present species, the European *E. tomentosus* and *E. siliculosus* are found at Cape Horn.

11. Delesseria *Davisii*, nobis; caule cartilagineo alato, lamina profunde pinnatifida v. pinnata, laciniis v. pinnis distichis cultrato-lanceolatis obliquis costatis penninerviis (nervis alternis) demum inter nervos alterne v. secunde lacerato-laciniatis, lacinulis erecto-patentibus costatis.

Hab. St. Martin's Cove, Cape Horn.

Stem, or original leaf 5-6 inches long, winged or widely margined with a membranous frond, sending out numerous alternate distichous simple or forked midribbed branches. These are rarely found entire, being generally deeply cleft, especially along the outer margin, in an oblique direction from

Primary leaf in the Kerguelen's Land specimens nine inches, in those from the Falklands 4-5 inches long, from an inch to an inch in width, rising from a cylindrical petiole or stem, oblong, round-topped, furnished with a strong midrib, and penninerved with opposite veins, having the substance of the frond thickened along the sharply serrated, but not sinuated margin. This primary leaf emits from the apices of the lateral nerves other leaves in all respects similar to itself, and all of them distinctly petiolate, and by no means rising (as in *D. sinuosa*) from sinuations of the margin, and these in their turn send out others which are at first obovate, and afterwards linear-oblong. The margin in all is sharply serrated rather than ciliate. In some very old specimens the membrane of the old leaf has perished, and there remains but a slightly winged midrib from which new leaves sprout proliferously in an irregular manner. Colour rather a dark blood red, inclining to purplish. This is so like *D. sinuosa*, that on a hasty inspection it might pass for the ciliated variety of that species. The colour and substance are very similar; but the margin of our plant is not sinuous, but proliferous, the new leaves not proceeding from deepened laciniations as they do in all the specimens of that species we possess, but being, from their origin, stalked and leaf-like. The margin of the frond also is sensibly thickened, the old leaf remains of its original form until it decays, and the situation of the fruit is different in the two species.

13. Nitophyllum *lividum*, nobis; fronde e stipite cartilagineo filiformi brevi late expansa basi vix venosa lividopurpurea tenerrima furcata v. dichotoma margine undulato, laciniis oblongis patentibus obtusis, soris minutissimis punctiformibus coccidiisque perplurimis per totam frondem sparsis.

HAB. Falkland Islands.

Stem cartilaginous, filiform, half an inch to an inch long, vanishing in a few faint nerves at the base of the widely spreading frond. Frond, save at the extreme base, perfectly veinless and delicately membranous, four inches long, six or more wide, divided into a few broad, forked, obtuse segments which spread at wide angles. Colour a livid purple, resembling that of some *Porphyræ*, but not so glossy. The hue of this species is sufficient to distinguish it from all others, except *N. Gunnianum* of Tasmania, but the substance of that plant, the fruit of which is unknown, is very much thicker and less lubricous.

14. Nitophyllum *fusco-rubrum*, nobis; stipite elongato filiformi nunc dichotomè ramoso nudo, ramis in fronde flabelliformi crasso-membranacea fusco-rubra lobata v. sæpe longitudinaliter fissa exeuntibus, frondis basi cuneato-attenuata tenuiter venosa; margine plano subintegerrimo, apicibus laceratis?, soris minutissimis punctiformibus coccidiisque numerosissimis per totam frondem sparsis.

HAB. Kerguelen's Land.

The specimens of this plant are very much torn and battered, but sufficiently perfect to show that they belong to a new and distinct species. The stems are from one to three inches long, and either simple or irregularly branched; the branches terminating in fan-shaped fronds, cuneate and somewhat veiny at the base. They are of a thick substance, veinless above, and have a dull brownish-red colour, darker than that of any other species known to us. The sori of

HAB. Cape Horn.

Frond 8-12 inches long or more, rising from a minute disc, with a cartilaginous filiform stem that becomes winged at about a quarter inch above the base, and thence is gradually lost upwards in the long narrow cuneate base of the frond, the traces of the stem gradually becoming fainter as the lamina widens, but not breaking up, as in some other species, into numerous veins. The normal form of the frond seems to be broadly lanceolate, gradually tapering to an acute point, and with an entire but wavy margin; sometimes however it is cleft from the apex downwards into a number of linear-lanceolate ribbon-like segments, which though they acquire proper margins, appear to originate in splitting or injury, more than from a natural division of the frond. This species is undoubtedly closely allied to N. *punctatum*, from which it is chiefly distinguishable by the long cuneate base of the frond passing into a filiform stem, and by the absence of dichotomous division, with wide axils.

17. Nitophyllum *multinerve*, nobis; fronde stipitata elliptica v. ovata subintegerrima v. lobata tenerrima rosea nervosa, nervis pluribus distinctis parce dichotomis subparallelis apicem versus frondis evanescentibus, soris. . . . ?

HAB. Cape Horn and the Falkland Islands.

Stem from ¼ inch, as in most of our specimens, to nearly an inch long, simple, breaking up at the commencement of the frond, into numerous rib-like dichotomous veins, which are continued through the major part of the frond and vanish towards its apex. Frond delicately membranous, rose-coloured, ovate or elliptical, but probably much modified as the plant advances. Our specimens are all young, and perhaps we are injudicious in founding a species upon them. Their nervation is, however, very remarkable, and much resembles that of our *Delesseria dichotoma*, but the nerves are much fainter, less distinct from the lamina, and they vanish at a greater distance from the apex, nor is there any indication in the present plant of a disposition to form distinct leaves.

18. Nitophyllum *Smithii*, nobis; fronde stipitata basi cuneata flabelliformi lobata demum lacerata rubra membranacea nervosa, nervo basilari crasso centrali, lateralibus radiantibus tenuibus nunc obsoletis, omnibus sensim evanescentibus, soris minutis rotundatis in frondis laciniis marginem versus densissime sparsis.

HAB. Falkland Islands.

Fronds 4-7 inches long, narrow in proportion, stipitate; the stipes from half an inch to an inch long, filiform, becoming winged and passing into the cuneate base of the frond, but continuing upwards as a strong midrib for a considerable way, in some individuals for nearly three quarters the length of the frond. From this central vein a number of others radiate in an oblique or arching direction towards the several segments of the margin. These, in some specimens, are very strongly marked; in others they are much fainter, and in some scarcely obvious. The outline of the frond is also extremely variable, and sometimes it is so much lacerated or cloven into ribbons, that it is difficult to trace the original form.

19. Nitophyllum *laciniatum*, nobis; fronde stipitata flabelliformi infra crassa subvenosa supra tenui-membranacea rosea profunde digitatim lobata vel subdichotomo-pinnatifida, laciniis lato-cuneatis inciso-dentatis, dentibus latissi-

of the frond, which is 4-5 inches long, and deeply cleft into 5-9 segments either radiating from a centre in a digitate manner, or springing like pinnules, from a lengthened rachis. Colour at the base brownish-red, becoming rosy upwards.

20. Plocamium* *Hookeri*, Harv.; fronde anguste lineari cartilaginea compresso-plana decomposito-ramosa disticha, ramis primariis subdichotomis patentibus, secundariis alternis flexuosis alternè folia et ramulos emittentibus, foliis planis aveniis obliquis obovato-lanceolatis obtusis basi attenuatis, nunc cultratis integerrimis v. margine exteriore crenatis, ramulis linearibus alternè et secundè pectinato-multifidis, stichidiis lateralibus densè fasciculatis brevibus digitatis laciniis obtusis simplicibus, coccidiis lateralibus sessilibus sparsis.

Hab. Christmas Harbour, Kerguelen's Land.

Frond 8-10 inches long, not quite a line in diameter, plano-compressed, cartilaginous, very much branched in an irregular manner between dichotomous and pinnate; the main branches spreading widely. Lesser branches with a linear outline, alternate, flexuose, furnished throughout both with flattened nerveless leaves, and with decompound ramuli, the larger of which resemble the branches in bearing a second set of leaves and branchlets; the ultimate divisions being generally secund and pectinate, as in P. *coccineum*. The leaves, which are peculiar to this species and at once distinguish it from every other, are about ½ an inch long, and from 1½ to 3 lines broad, narrow-obovate or lanceolate in shape, obtuse, nerveless and generally quite entire, but sometimes their outer margin is slightly crenate. They are always more or less oblique. The axils are all rounded. The stichidia densely tufted and laterally disposed on the ultimate ramuli. Colour a dark and rather dull red.

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* *Plocamium Magellanicum*, H. and H. (*Thamnophora Magellanica*, Mont.) was found abundantly at Kerguelen's Land, the Falkland Islands, and Cape Horn. Most of our very numerous specimens are covered with *coccidia*, but not one solitary individual bears *stichidia*, which is the more remarkable because, in other species of the genus, this latter description of fruit is much most generally produced.

21. Rhodomenia *Hookeri*, Harv.; fronde stipitata carnoso-membranacea sanguinea v. atro-sanguineâ flabelliformi profundè fissâ, laciniis lineari-cuneatis di-trichotome-multifidis erecto-patentibus flabellatis, laciniis eroso-pinnatifidis pinnulis brevissimis quadratis apicibus truncato-obtusis fastigiatis, axillis rotundatis, coccidiis sphæricis ad apices (tunc acutos) congregatis, soris granulorum laxis in apicibus roseis dilatatis immersis.

HAB. Kerguelen's Land, the Falklands and Cape Horn; abundant.—A most protean species, of which the following varieties were collected:

α, flabellata ; fronde stipitata rosea v. sanguinea flabellata, fere ad basin partita, laciniis distincte flabelliformibus, basi cuneatis repetite di-tri-vel palmatim-dichotomis, laciniis linearibus ¼-½ unciam latis, margine lacinulis brevissimis truncatis quadratis alternis ornato, axillis rotundatis.

Some specimens of this variety bear a striking likeness to R. *Lamberti*, but are of a different substance.

β, atrosanguinea ; fronde substipitata atrosanguinea pal-been examined and compared whilst fresh, we should scarcely venture to refer it to the same species. It was found at Kerguelen's Land, accompanying α, δ.

δ, *lacerata*; inter α et β, media.

At Kerguelen's Land. The root is accompanied by fibres, and the frond is subsessile.

ε, *prolifera*; fronde 1½-2 uncias longa subdichotoma, laciniarum marginibus proliferis lacinulas numerosas angustissimas furcatas v. irregulariter ramulosas acutas emittentibus.

At Kerguelen's Land, on sea-weeds cast up.

ζ, *pulcherrima*; laciniis angustis decomposito-ramosis, pinnulis ultimis elongatis emarginatis.

Berkeley Sound, Falkland Islands.

This variety is remarkable for having few and but little divided principal segments, about ¼ inch wide, suddenly passing into narrow much divided minor segments not a line and sometimes not half a line in breadth. It bears no resem-to β or γ, but through α it is joined to them.

22. Rhodomenia? *variolosa*, nobis; fronde carnoso-membranacea sanguinea in laciniis pluribus lato-linearibus v. cuneatis elongatis furcatis v. dichotomis fere ad basin divisa, laciniis basi attenuatis erectis apice obtusis v. emarginatis, coccidiis superficiariis sessilibus v. pedicellatis densissime conspersis deciduis.

Hab. Kerguelen's Land.

Frond 7-8 inches long, divided nearly to the base into several segments, which vary from ½ an inch to an inch in breadth, taper to the base, are broader upwards and are either forked or twice or thrice dichotomous, with widely spreading angles. The margin is simple, or sparingly proliferous. Over the surface of the laciniæ, on one or both sides of the frond, papillæform bodies, containing granules, but not exactly similar in structure to the *coccidia* usual in the genus, are very densely scattered. They are fixed to the surface by a central point, and may very easily be detached with a slight touch, leaving behind them a minute puncture. These form the most striking feature of the species, which otherwise resembles some of the aspects of R. *Hookeri*. In structure the frond has an affinity with that of R. *polycarpa*, but the fructification is abundantly different. Some of the specimens are very much smaller, being only two inches high, with segments a quarter inch broad.

22. Rhodomenia *dichotoma*, nobis *in Flor. Antarct.* v. 1.

HAB. Campbell's Island.

23. Phyllophora *cuneifolia*, nobis; fronde stipitata lato-cuneata v. flabelliformi integra v. emarginata, e disco v. apice frondes consimiles emittente.

HAB. Falkland Islands: rare.

Frond stipitate; stipes flattened, short, gradually expanding into the broadly wedge-shaped, or inversely deltoid frond, which is of a horny membranous substance and pinky red colour, about 1¼-2 inches long, an inch or 1½ inches broad, either truncate and entire or obtusely emarginate, or sometimes erose. From the disc or apex of this primary frond, others exactly similar arise, and these in their turn produce others, so that the plant finally becomes an irregularly branched chain of fronds several inches in length. Fruit unknown. This may only be a very broad state of *Phyllophora Brodiæi* (*Fucus Brodiæi*, Turn. t. 72) a point which cannot be fully determined till the fruit be discovered. It is at least a or slightly compressed, tufted, rising from a mass of creeping fibres. Colour dull purplish, similar to that of *G. purpurascens*. This may possibly be Agardh's *Sphærococcus subulatus β nigrescens*, a point which cannot be determined without comparison with his specimens.

25. Gracilaria? *aggregata*, nobis; cæspitosa, nigrescens, è basi communi late scutata carnosa orta, frondibus filiformibus subcompressis cartilagineis vagè ramosis subdichotomis, axillis angustis, ramis erectis simplicibus vel furcatis omnibus filiformibus obtusis, apicibus subfastigiatis, fructu. . . . .?

HAB. Falkland Islands.

Frond 3-4 inches high, scarcely half a line in diameter, springing in dense tufts from a common fleshy scutate base, which is nearly an inch broad, irregularly branched; sometimes the lower half is simple, the upper part of the frond only being branched; sometimes it is nearly regularly dichotomous. The axils are obtuse, and all the divisions remarkably erect. The colour is blackish purple; the substance cartilaginous; and in drying it scarcely adheres to paper. The habit of this species has some resemblance to that of *Polyides rotundus*.

ACANTHOCOCCUS, *Nov. Gen.*

Frons linearis, compressa, disticha ramosa, cartilagineo-carnosa, rosea. *Axis* solidus, densus, e cellulis minutissimis formatus, tubulis magnis pluriseriatis extus sensim minoribus circumdatus. *Peripheria* cellulosa, cellulis parvis reticulata. *Coccidia* globosa, aculeata, in apicibus ramulorum immersa, sporis numerosissimis repleta.

26. Acanthococcus *Antarcticus*, nobis.

HAB. Cape Horn and the Falkland Islands.

Frons 4-8 uncias alta, compressa, anguste linearis, basi semilineam vix ad lineam latitudine, sursum sensim angustata, distiche ramosissima. *Rami* patentes vel divaricati, nunc flabellatim multifidi, nunc pinnati et bipinnati; secundarii nunc breves subsimplices, nunc longissimi, ramosissimi.

Ramuli per totam frondem sparsi, apicem versus crebriores, erecti et erecto-patentes, subulati, 1-3 lineas longi, alterni vel sæpius secundi, simplices vel parum divisi. *Coccidia* solitaria, globosa, spinis 4-6 magnis subulatis armata, in apicibus ramulorum immersa, sporis numerosissimis minutis repleta. *Tetrasporæ* ignotæ. *Color* intensè ruber, siccitate obscurior. *Substantia* firma, cartilagineo-carnosa. Chartæ adhæret.

We cannot satisfactorily include this plant under any established genus. It belongs unquestionably to the *Delesserieæ*, and will stand near *Plocamium*, from which it differs in the structure of the frond, as well as in the fructification. The densely cellular axis, surrounded by large empty cellules or tubes, is quite unlike *Plocamium*. Outwardly there is a close resemblance between our plant and *Heringia rostrata*, J. Ag. (*Gelidium ? rostratum*, Griff. *Fucus alatus*, *a*, *angustissimus*, Turn.), but besides the difference in fructification, the structure of that plant is uniformly dense, without a trace of large cellules or tubes. Again, our plant may be compared with *Microcladia*, to which it approaches in habit, and to a certain extent, the spinous *coccidia* may be considered analogous to the involucrated *favellæ* of that genus; but in *Microcladia* the axis, far from being the densest part of the species of this difficult genus, varies extremely in all its characters.

28. Iridæa *micans*, Bory.

β. *ciliolata*, nobis; stipite brevi cartilagineo cuneato ciliato-dentato mox in frondem ovato-lanceolatam simplicem desinente, fronde latissima basi ovata apice obtusa v. acuta v. emarginato-bifida membranacea vel cartilagineo-membranacea rubra plana, nitente lævi margine vix undulata.

HAB. St. Martin's Cove, Cape Horn.

Fronds 6-12 inches long, 3-6 broad. This is a distinct looking form, but we fear not entitled to rank as a species. The common state of *I. micans* was found in plenty at the Falkland Islands, and accompanying the present individuals.

29. Gigartina *divaricata*, nobis *in Flor. Antarct.* v. 1.

HAB. Campbell's Island.

30. Chondrus *tuberculosus*, nobis *in Flor. Antarct.* v. 1.

HAB. Lord Auckland's Group.

31. Halymenia *latissima*, nobis *in Flor. Antarct.* v. 1.

HAB. Lord Auckland's Group and Campbell's Island.

32. Dumontia *cornuta*, nobis *in Flor. Antarct.* v. 1.

HAB. Campbell's Island.

33. Rhodomela? *comosa*, nobis; ramosissima atro-rubescens, caule cylindraceo frondem percurrente ramis alternis crebris onusto, ramis elongatis pluries alterne divisis erecto-patentibus sensim attenuatis basi subangustatis cylindraceis, ramulis ultimis setaceis acutis abbreviatis vagis, capsulis ovatis breve pedicellatis.

var. β. *fibrillifera*; fronde tenuiori laxius ramosa, apicibus fibrilliferis.

HAB. Both varieties common at the Falkland Islands.

Stem cylindrical, 6-9 inches long, in var. α from a line to nearly a line in diameter at base, in var. β very slender, either undivided, or branching from the base into 3-4 principal stems, which are throughout their length thickly set with minor branches, again and again similarly divided. All

parts of the frond are opaque and seemingly inarticulate; but a section of the stem shows an articulated axis similar to that of many *Polysiphonia*, a central tube being surrounded by about seven others with a thick external stratum of smaller cellules. The capsules (or *keramidia*) are abundantly produced on our specimens. Colour dark reddish brown. Substance flaccid and closely adhering to paper.

34. Rhodomela *patula*, nobis; fronde cylindracea brunnea cellulis irregularibus notata vagè bipinnatim ramosa, ramis alternis elongatis horizontalibus vel suberecto-patentibus, minoribus elongatis patentibus subsimplicibus attenuatis nudis.

HAB. Falkland Islands.

Frond 4-6 inches long, ½ a line in diameter at the base. Stem undivided, set with alternate patent branches 4-6 inches long, which in our specimens bear a second series. Colour blackish or dark brown. Substance membranaceous. The axis of the frond exhibits four large tubes surrounding a central one, with an external stratum of small cellules.

35. Rhodomela *Gaimardi?* (Ag.) fronde cylindracea flabellatim ramosissima, stipite simplici filiformi, ramis primariis divaricatis, secundariis bipinnato-multifidis patentibus, laciniis alternis, ramulis brevibus setaceis simplicibus et furcatis vel quadrifidis sæpe secundis per totam frondem

sent, has come under our observation, and we think it possible that Agardh may have been deceived by a badly dried specimen in the compression attributed to the frond.

36. Polysiphonia *anisogona,* nobis; atro-rubescens, flaccida, madefacta fragillima, frondibus cæspitosis setaceis articulatis equalibus vix attenuatis irregulariter ramosissimis, ramis ramulisque alternis v. subdichotomis erectis v. appressis, axillis angustissimis, articulis variis, inferioribus diametro sextuplo, superioribus duplo-triplove longioribus, ultimis sesquilongioribus v. quadratis, omnibus striis sex notatis, e tubulis 12 radiantibus tenuibus endochromaticis formatis, keramidia. . . . . ?

Hab. Cape Horn and the Falkland Islands.

Tufts extremely dense, 4-5 inches high, intricate. Articulations unequal in length, the lower ones very long, the upper very short, all marked with six straight or spiral striæ, being composed of twelve slender coloured tubes surrounding a central cavity. Colour dark red. The impossibility of removing without breaking the specimens of this plant from the paper on which they have been dried renders our account of the ramification imperfect, but we have no hesitation in pronouncing it a distinct species. In many respects it accords with the British *Pol. atro-rubescens,* but the substance is very much more frail and tender.

37. Polysiphonia *microcarpa,* nobis; atro-rubescens cæspitosa, frondibus tenuibus membranaceis flaccidis tenacibus oligosiphoniis equalibus vix attenuatis irregulariter repetite dichotomis, ramis ramulisque erecto-patentibus crebre divisis, articulis bistriatis e tubulis quatuor formatis, iis ramorum majorum diametro multiplo, minorum 3-4-plo, ramulorum 1½ duplove longioribus, keramidiis pusillis ovatis breve pedicellatis.

Hab. Hermite Island, Cape Horn.

Filaments 3-4 inches long, capillary, flaccid, but not fragile, densely tufted and branched in an irregularly dichotomous manner from the base, of nearly equal diameter throughout. Keramidia very small. Colour dark red. This nearly re-

sembles *P. formosa*, Suhr, but differs in the form and size of the capsules.

38. Polysiphonia *abscissa*, nobis; coccinea, frondibus tenuibus membranaceo-gelatinosis flaccidis tenacibus oligosiphoniis, caule primario parum diviso, divisuris frondem percurrentibus, ramis secundariis alternis multifidis circumscriptione obovatis, minoribus alternis erectis subdichotome divisis, ramulis apice multifidis fastigiatis (quasi abscissis) fibrilliferis, articulis ramorum diametro 4-6 plo, ramulorum 2-3 plo longioribus bistriatis, keramidiis pusillis ovatis breve pedicellatis.

HAB. Cape Horn.

Filaments 3-4 inches long, purplish rose-coloured or nearly crimson, with a principal stem and branches. The ramuli remarkably fastigiate. Nearly related to P. *microcarpa*, but the branching is more regular and the colour different.

39. Polysiphonia *tenuistriata*, nobis; rubescens articulata multistriata, frondibus gracillimis tenuissimis flaccidis elongatis, caule subsimplici flexuoso, ramis distantibus decompositis circumscriptione ovatis, ramificatione irregulariter dichotoma, ramis ramulisque sensim attenuatis apice fibrillosis, axillis erecto-patentibus acutis, articulis ramorum diametro multuplo, ramulorum 2-3 plo longioribus

Frond an inch high, solitary, rigid, as thick as a hog's bristle, simple at base, and rising with a stipes, distichously branched above in a flabellate manner; the outline circular. Branches multifid, irregularly dichotomous, fastigiate, ramuli erect. Joints of the stem very long, 6-8 times their diameter, of the branches 2-3 times, and of the ramuli one and half as long as broad, all marked with numerous narrow striæ. Colour dingy brown, scarcely rufescent. It imperfectly adheres to paper. Of this very distinct species we have seen but a single specimen.

41. Polysiphonia *Davisii*, nobis; punicea, caule articulato basi ultrasetaceo sensim attenuato frondem percurrente subindiviso per totam longitudinem ramis alternis decompositis ornato, ramis erecto-patentibus sub-bipinnatim divisis, ramulis ultimis brevissimis crebre alternis erectis furcatis vel rarò bifurcatis axillis angustis, articulis omnibus brevissimis, ramorum diametro equantibus, ramulorum brevioribus, e tubulis octo (duobus lateralibus majoribus) tubum centralem amplum cingentibus formatis.

HAB. Cape Horn.

This is a handsome plant, though perhaps too closely related to *P. punicea*, Mont. which was found abundantly at Kerguelen's Land, the Falklands, and Cape Horn. Our present plant has a different aspect, from having a more regular primary ramification, with more erect, denser and less divided ramuli. As far as we are able to judge by an imperfect specimen, *Heterosiphonia Berkeleyi*, Mont. is also a nearly allied form; and if the genus *Heterosiphonia* is to be retained, the present plant, with *P. panicea*, and probably some others, should be referred to it.

42. Polysiphonia (*Heterosiphonia*) *pectinata*, nobis; setacea rigida, fronde purpurea distichè decomposito-pinnata, ramis alternis articulatis tri-striatis pectinato-pinnatis, ramulis (vel pinnulis) simplicibus alternis brevibus subulatis monosiphoniis (!) articulatis, articulis diametro sesquilongioribus.

HAB. Cape Horn, very rare.

Frond 2-3 inches long, setaceous, rigid, distichously branched, decompound in a repeatedly pinnate manner, with much of the habit of *Bonnemaisonia asparagoides.* Stem subsimple, jointed, tristriate, compressed or angular, beset throughout with alternate patent branches; which are in like manner furnished with a second series. All the branches are regularly pectinated, with alternate patent subulate *single-tubed* (!) short ramuli. The joints throughout the whole frond are short. Those of the stem are formed of four unequal tubes, the two lateral ones largest, surrounding a central cavity, exactly as in *Heterosiphonia,* Mont.; those of the ramuli have the structure of the joints of *Callithamnion.* The colour is a beautiful purplish rose-red.

43. Polysiphonia *botryocarpa,* nobis in *Flor. Antarct.* v. 1. p. 181 to 70.

HAB. Lord Auckland's group.

44. Polysiphonia *Lyallii,* nobis in *Flor. Antarct.* v. 1, p. 182 to 74, f. 1.

HAB. Lord Auckland's group.

45. Polysiphonia *dumosa,* nobis in *Flor. Antarct.* v. 1, p. 182 to 75, f. 1.

HAB. Campbell's Island.

46. Polysiphonia *rudis,* nobis in *Flor. Antarct.* v. 1, p. 183 to 74, f. 2.

cavum radiatim cingentibus formata. *Keramidia*...... *Stichidia* lanceolata ramulos terminantia, tetrasporas pluriseriatas includentia.—Algæ pusillæ cæspitosæ e filis repentibus ortæ, rupes marinas *Antillanas*, *Antarcticas* et *Austro-Atlanticas*, vix demersas, vel ad limitem pleni maris æstus sitas, incolentes.

A very natural little group, which occupies in the Southern Ocean the same position with respect to high-water mark that *Lichina* and *Catenella* do in the Northern.

48. Bostrychia *Hookeri*, Harv.; caulibus indivisis apice involutis, ramis lateralibus abbreviatis alternis subquadrifariis erecto-patentibus, inferioribus subulatis simplicibus furcatisve, superioribus alternè multifidis, ramulis subulatis acutis erectis, axillis angustis acutis, stictis subtriseriatis, stichidiis lanceolatis acutis ramulos minores terminantibus.

Hab. Cape Horn and the Falkland Islands.

Fronds 1-1½ inches high, densely tufted, blackish-purple, rigid. Stem generally undivided, furnished with lateral short branches throughout its length. Branches sometimes all about a line long, and but slightly divided; sometimes the lowest are of this length and character, the upper 2-4 lines long, and repeatedly branched. All the ramuli are subulate and erect, or erecto-patent. The tips of the stem and main branches are generally strongly involute. Under the microscope the branches and ramuli appear beautifully marked with three rows of dark purple dot-like cells.

49. Bostrychia *fastigiata*, nobis; caulibus multifidis fastigiatis apicibus involutis, ramis æquilongis curvatis, ramulis

formia seriem duplicem sphærosporarum includentia; 2°. conceptacula pedicellata sporis clavatis erectis referta."—*Hist. Nat. de Cuba.*

We are unable to find the "fila elongata colorata," filling the axis. On the contrary, in the species now described, as well as in *B. radicans*, Mont., the axis is a tube, interrupted at intervals by membranous diaphragms. The structure is indeed very similar to that of *Polysiphonia*, from which this genus differs in having the cellules of the periphery very short, while those constituting the axis are lengthened.

alternis subulatis furcatis vel alterne multifidis, axillis acutis, stictis 3-4-vel pluriseriatis.

HAB. Cape Horn.

Fronds ½ an inch high, fastigiate, divided from the base into many main branches, red-purple. Stem scarcely any; branches long, curved, set with simple or multifid ramuli, much incurved at the tips. Perhaps this is only a variety of the last mentioned species, differing chiefly in having an abbreviated stem, with longer and consequently more divided branches, and a duller colour.

50. Bostrichia *vaga,* nobis; caulibus flexuosis vage subdichotomo-ramosis, ramis paucis simplicibus arcuatis longissimis nudis, apicibus incurvis, ramulis nullis, axillis patentibus, stictis minutis multi-seriatis, stichidiis longissime pedunculatis lanceolatis acutis.

HAB. Kerguelen's Land.

Fronds ½ an inch to an inch in height, densely tufted, very flexuose, irregularly branched. Colour blackish-purple. Strictæ small, disposed in several, 6-8, rows. Very distinct in its ramifications.

51. Bostrychia *mixta,** nobis; caulibus pinnatis, pinnis patentibus simplicibus vel furcatis, vel alterne ramosis, ramulis subulatis patente divaricatis, apicibus strictis vel vix invo-

Allied to S. *Hookeri*, but smaller, and with more patent ramification.

52. Ptilota *Harveyi*, Hook. fil.; caule compresso cartilagineo anguste lineari inarticulato furcato vel inordinate ramoso, ramis distichis pinnatim decomposito-ramosis, majoribus et minoribus costa articulata percursis pectinato-pinnulatis, pinnulis creberrimis abbreviatis simplicibus articulatis monosiphoniis subulatis oppositis, articulis pinnularum quadratis, favellis ad apices ramulorum sitis, ramulis pinnatis involucratis sphærosporis ad apices pinnularum aggregatis nudis brève pedicellatis.

var. β. *pectinata;* pinnulis subdistantibus.

HAB. Cape Horn and the Falkland Islands, abundant.—var. β. Cape Horn.

Frond 8-12 inches long and nearly as broad in the spreading of the branches. Stem filiform, ½ a line in diameter, nearly of equal breadth throughout, irregularly forked, dichotomous, or very much branched in a manner between dichotomous and pinnate; the lesser branches more regularly pinnate or bipinnate; every part of the frond, but especially the younger portions, beautifully pectinated with opposite jointed ramuli, of a line in length. These ramuli are simple, and single-tubed, like those of a *Callithamnion*. The var. β only differs from the common form in having the ramuli more distant. The species to which this is most nearly allied is undoubtedly *P. plumosa* of the Northern Hemisphere, whose variety β (which Kutzing has erected into a species, *P. elegans*, Kg.) bears articulated ramuli. Our plant is, however, much larger than this variety, more rigid, and the ramuli are of much greater diameter. Compared together under the microscope, they are seen to be abundantly different.

53. Callithamnion *simile*, nobis; fronde subsolitaria rigidiuscula ramosissima, ramis alternis v. subdichotomis articulatis aveniis, ramulis brevissimis oppositis distichis horizontalibus crassis sursum pectinatis è quoque ramorum articulo porrectis, pinnulis robustis simplicibus v. ramosis, arti-

culis ramorum diametro sesqui-subduplo longioribus, ramulorum diametrum subequantibus.

HAB. Christmas Harbour, Kerguelen's Land, rare.

Fronds 2-5 inches long, slender, rather rigid, much and distichously branched; all the branches jointed, and of equal breadth throughout. Ramuli ½ line long, issuing in opposite pairs from the middle of every joint throughout the length of the frond, pectinated on their upper face with secondary ramuli, thick, subacute, and very patent. Colour brownish red. This so closely resembles *C. Plumula*, that it is difficult by mere words to discriminate them; yet on comparing them together on the table of the microscope, they are obviously not the same. Our *C. simile* is a much coarser, more rigid plant; its ramuli are more robust in proportion to the diameter of the joint, and the joints are shorter. We are the more disposed to keep it specifically distinct from *C. Plumula*, with which we were at first inclined to unite it, because specimens clearly referable to that species were found at Cape Horn; so that the differences above noticed do not appear to originate in difference of local circumstances.

54. Callithamnion *Ptilota*, nobis; fronde (parvula) rigida setacea pinnatim ramosissima, ramis vix distichis venoso-striatis subopacis, secundariis opposite pinnulatis, pinnulis simplicibus patentibus subulatis e quoque ramorum geni-

plicibus subulatis erecto-patentibus, articulis ramorum diametro 4-5-plo, ramulorum subduplo longioribus; favellis magnis bilobis ad apices ramorum sitis.

Hab. Cape Horn, in deep water.

Parasitic, half an inch long, vaguely branched, rose red, flaccid and membranous. Ramuli issuing from every joint, usually three, rarely two or four, slender, short and simple-joints of the stems very long. Favellæ large.

56. Callithamnion *flaccidum*, nobis; fronde gracillima membranacea flaccida rosea decomposite ramosa, ramis primariis secundariisque oppositis! vel alternis! elongatis patentibus distichis, ramulis ultimis brevibus simplicibus oppositis vel secundis patentibus apice incurvis; articulis ramorum primariorum diametro multoties, secundariorum 6-10-plo, ramulorum sesqui-longioribus pellucide roseis aveniis.

var. β. *alternifolium*; ramis ramulisque alternis vel secundis, rarissime hic illic oppositis.

Hab. Cape Horn, in deep water; both varieties.

Frond 2-3 inches long, very slender, membranous and flaccid, of a beautiful rose colour, much branched, the branches lateral and distichous. In var. α, branches and ramuli are almost invariably opposite; while in β. they are as regularly alternate or secund, the inner ramuli of the branches being abortive, those along the outer edge only developed. In other respects the two varieties are identical. This species is allied to C. *Turneri*, but is a much larger and more branching plant.

57. Callithamnion *scoparium*, nobis; caule basi crasso inarticulato filis intertextis flexuosis stuposis vestito flabellatim ramoso, ramis primariis cauli similibus, secundariis articulatis pellucidis tenuibus strictis pinnatis et bipinnatis creberrimis quadrifariis, e primariorum apicibus fasciculatim enatis apice fastigiatis, articulis diametro 2-3 plo longioribus.

var. β. *ramulosum*; pinnis apice ramulis secundis ornatis.

HAB. Falkland Islands; β. Cape Horn.

Fronds 2-3 inches high, bushy. Stems thick, inarticulate, densely clothed with flexuous woolly fibres, only slightly divided. Branches resembling the stem, throughout their length densely shaggy, with slender crowded quadrifarious straight branchlets. These secondary branches are articulate, irregularly divided, either pinnate, or having secund or sub-dichotomous divisions; but in all cases they are straight, and erect, the ramuli mostly appressed. The tips are either acute or obtuse, and simple or furnished with short pectinate secund ramuli. Colour dark purple. Substance rigid. To the naked eye this resembles C. *tetricum* and C. *crinitum*, but the microscope shows it to be abundantly different. It has much the habit of *Sphacelaria scoparia*, as alluded to in the trivial name.

58. Callithamnion *Gaudichaudii*, Ag.? fronde fruticosa ramosissima, caulibus primariis crassis inarticulatis opacis striatis quadrifariis decompositis sensim attenuatis, ramis inarticulatis striatis ramulis plumosis quadrifariis densissime obsitis, ramulis (vel plumulis) brevibus roseo-pellucidis articulatis pinnatis et bipinnatis, pinnulis patentibus inferioribus simplicibus elongatis subulatis superioribus furcatis vel iterum pinnulatis, articulis diametro subduplo longioribus.

ramuli tender and adhering to paper. This species comes very near C. *Arbuscula* and C. *Brodiæi*, between which it almost seems intermediate. It has the large size and robust habit of the former, but much longer and more compound plumules; and it is much stouter than C. *Brodiæi*, with more opaque stems. Var. β. is perhaps only an advanced state of the plant, being gathered in the same locality and three months later in the season. It chiefly differs in being of a more tender gelatinous substance, and in having the branches less densely clothed with ramuli, and most of them naked at the base. Its outward character is something that of C. *tetragonum*. We cannot be sure whether this be Agardh's C. *Gaudichaudii*, having seen no specimens of his plant, and his description being too brief to enable us perfectly to determine the matter; but no other plant among our Falkland Island collection so nearly coincides with his words. He had probably only a single specimen to describe from, and we have a large suite of all sizes and ages.

59. Callithamnion *gracile*, nobis, in *Fl. Antarct.* v, 1, p. 191.

HAB. Campbell's Island.

60. Callithamnion *hirtum*, nobis, in *Fl. Antarct.* v. 1, p. 192.

HAB. Lord Auckland's group.

61. Callithamnion *micropterum*, nobis, in *Fl. Antarct.* v. 1, p. 192.

HAB. Lord Auckland's group.

62. Ectocarpus *geminatus*, nobis; cæspite basi intricato olivaceo v. virescente, filis (majusculis) tenuibus ramosissimis apice liberis plumosis, ramis ramulisque patentibus oppositis v. quaternis, ultimis brevibus, utriculis conicis sessilibus oppositis basi sæpius ramulo brevi bracteæformi fulcratis.

HAB. Cape Horn and the Falkland Islands.

A beautiful species, 4-5 inches long, having the habit of E. *granulosus*, but amply distinguished by the constantly opposite, sessile, conical capsules or utriculi, which are very generally subtended by a minute ramulus half their own length. The main branches are frequently in fours; the ultimate ramuli, which are very short, are constantly opposite, and issue at an angle of 75° or 80°. Besides the present species, the European E. *tomentosus* and E. *siliculosus* are found at Cape Horn.

(*To be continued.*)

On Six Species of JUNGERMANNIÆ, *new to Britain, by* THOMAS TAYLOR, M.D.

Of the numerous discoveries of the late Mr. Thomas Drummond, the addition of the following six species of Jungermanniæ to the British list is a singular proof of the acuteness and sagacity with which he investigated nature. The species were all observed in the Highlands of Scotland; and when we consider that such are the classical localities to which continental as well as British botanists have directed their attention, from the times of Dickson and of Don to the present hour, we must be surprised to find that no other individual has noticed the species alluded to, found more than ten years by Mr. Drummond. They occur among other cryptogamic discoveries of the same individual in the extensive and most valuable collection of Sir William Hooker.

1. J. (Scapania) *uliginosa*, Nees. *Synops. Hepat.* p. 67.

compresso, truncato, denticulato." It may be not amiss to note that *Scapania curta*, Nees. and *Scapania inigua*, Nees. have both been lately found near Dunkerran, in the county of Kerry; the former abundantly both on mountains and in woods, the latter more scarce, on wet mural banks in the mountains.

3. J. *Schraderi*, Mart. *Flor. Erlang. Crypt.* p. 180, t. 6, f. 55. Jung. autumnalis, Decand. *Flor. Franc*, t. 5, p. 202.
Highlands of Scotland.

By the present tardy discovery, Mr. Drummond has removed a reproach from British Cryptogamists, who had hitherto in vain sought this species, long known to have existed in Europe from Portugal to the North of Germany, and in America from Canada to New York.

4. J. *Zeyheri*, Hüben, *Hep. Germ.* p. 89, n. 25; *Synops. Hepat.* p. 96.
Highlands of Scotland.

It must be confessed that this species approaches very closely to *Jung. cordifolia*, Hook.; still, the more patent and shorter leaves give it a squarrose appearance, not at all observable in the latter.

5. J. *gelida*, Tayl.; caule repente adscendente subsimplici flexuoso (apice innovante) foliis approximatis erecto-patentibus secundis subrotundis bifidis, segmentis inæqualibus acutiusculis incurvis integerrimis.

Among *Gymnomitrion concinnatum*, Nees, Highlands of Scotland.

Creeping up here and there through the *Gymnomitrion*, overtopping it and then reclining; reddish-brown above, but the colour of the older, inferior, and more shaded parts quite discharged. Stems very slender, sometimes one inch long, consisting of the growth of former seasons topped by that of the present year. Attached by rootlets for its entire length except near the top. Leaves convex, largely cellular, the sinus between the segments sometimes acute, more commonly obtuse.

It is allied to *Jung. punicea*, Nees. from Java, whose colour it emulates at the tops of the shoots. It is, however, a larger plant, less branched, has the division of the leaves deeper, and their cells far larger.

6. J. *Kunzeana*, Hüben, *Hep. Germ.* p. 115, n. 38; *Synops. Hepat.* p. 122.

The editors of the Synopsis appear not to have met with the fructification; we would therefore propose the following amended specific character; caule adscendente cæspitoso radiculoso subsimplici, foliis erecto-patentibus imbricatis secundis quadrato-rotundatis integerrimis obtuse complicatis sinu angusto bifidis, laciniis ovatis obtusis incurvis, stipulis bipartitis, laciniis lineari-lanceolatis integerrimis, calyce terminali oblongo-ovato subcompresso subtruncato denticulato."

Patches dense, olive-brown. Stems about one inch long, sparingly branched; the entire inferior side has thickly set rootlets. Leaves crossing the stem, concave, all pointing upwards; some near the top trifid. Lateral perichætial leaves quadrifid, the stipular bifid, all with a few spinous teeth at the base, and sometimes one or two above the base. Calyx convex above, deeply channelled below. Peduncle four times as long as the calyx. Capsule oblongo-ovate.

Port Jackson, in which is situated the town of Sidney, is exceedingly varied by a great number of small bays and diminutive islands, clothed with luxuriant vegetation, and conveying the idea of a rich and fertile soil. The rocks, which may be seen in various directions, are composed of quartzose limestone, of coarser or finer grain, and more or less tinged with oxyde of iron.

Proceeding towards Botany Bay, the traveller soon finds himself surrounded with sand-hills of trifling elevation, on which grow shrubs and low trees, chiefly consisting of *Eucalyptus*, and other indigenous *Myrtaceæ*, *Acacias*, the *Proteaceæ*, *Petrophila*, *Isopogon*, *Lambertia*, *Grevillea*, *Banksia*, *Hakea*, and *Persoonia*. The *Grass tree* (*Xanthorrhæa*) gives a peculiar character to many spots, and *Zamia australis* is no less striking. *Lampocarya* and *Gahnia* command attention by their lofty spikes or brown panicles; they prevail in the marshes which fill up the depressions between the hills. The *Epacrideæ*, *Styphelia*, *Lysinema*, and *Sprengelia*, are conspicuous for the brilliancy and profusion of their blossoms; and many *Rutaceæ* are equally showy; for instance, the beautiful *Corræa speciosa*, *Crowea*, and the species of *Boronia*. I also noticed some handsome *Orchideæ*, particularly *Corysanthes fimbriata*; but there are not many of them in flower this time.

The north shore is the richest, the soil being better, and it producing a great number of *Acacias*. *Casuarina* is abundant, and of several kinds; and the *Gum Trees* (*Eucalyptus*) attain a greater development: their peculiarly growing foliage and smooth white bark give these trees a very marked aspect. On the virgin soil there is no turf whatever, though the *Gramineæ* are abundant and varied.

The essential character of this *Flora* resides, in the great variety, in a small extent of country, of its genera and species, which are nearly all woody, and adorned with large, bright, and numerous, and strikingly, shaped flowers. At the time of my arrival, not a drop of rain had fallen for eighteen months; thousands of sheep and oxen had consequently perished, and great distress prevailed in the colony; but during the four months of my sojourn at Sydney, showers fell frequently, and with almost tropical violence.

The climate is charming, the air exceedingly pure, and cool in the winter season, when those individuals who have resided in it long are apt to complain of feeling rather too cold. In the afternoon, the sea-breeze always blows; and I never beheld such glorious sunrises and sunsets; nor a more lovely moon, even in the Bay of Naples, or shining on the Campanile at Pisa. The stars may glow equally brightly in France; but the firmament in this hemisphere is richer in those of the first magnitude. In the constellations of the Southern Cross, the Centaur, the Argonaut, the Dog-star, the Scorpion, the Virgin, Boötes, &c., the individual stars are peculiarly large and bright. At this present time, Jupiter and Venus nightly adorn the sky.

Bunga-Bunha District, Archer's Station,
Jan. 6, 1844.

I quitted Sydney, after having devoted six months to studying the Botany of its environs, with the assistance of R. Brown's "*Prodromus*," and the 7th Volume of De Candolle's great work. There were several tribes of plants, however, which I could not investigate: the *Euphorbiaceæ*, productive of plants as the environs of Sydney; still there are some strikingly beautiful on the mountains of Newcastle, and the marshes close to that town. *Doryanthes excelsa* grows near Macquarrie Lake, often attaining a height of 12-18 feet; it also inhabits the mountain called the Sugar-loaf, between Newcastle and Maitland, and springs up, together with the *Grass tree* (*Xanthorrhœa*), among the huge blocks of pudding-stone. A noble, scarlet-flowered *Blandfordia*, is found in the marshes (but these are now generally dry), along with a profusion of *Melaleuca* (Tea trees), *Calothamnus*, with fine red blossoms, several *Leptosperma*, *Fabricia*, and *Baccharis*.

After a month's stay at Newcastle I ascended the river, and visited several interesting geological localities: Harper's Hill, where there are many fossil shells; and Blackcreek, of which I investigated the calcareous formation. I then fixed myself for some time at Glendon, a very large farm, the property of Messrs. Scott, who spared no pains to render my researches both easy and agreeable. I noticed a great difference in the Flora here, and even at Harper's river; the plants of the maritime zone having disappeared, and been replaced by those of the interior. A great variety of small herbaceous *Leguminosæ*, and the little *Mimosa terminalis*, always spring up abundantly after rain; but this blessing is so scarce, that the proprietors are compelled to forego agriculture. Puddingstone is still the prevailing kind of rock, mingled with sand stone, of a coarser or finer grain, which often again passes into puddingstone. Coal exists in many spots, between Newcastle and Liverpool Range, and may be traced along the river banks and by the edges of the little streams which feed the rivers: as Glendon brook, West brook, and many others; and particularly on the burning mountain, Mount Wingen, which is nothing else than a mass of ignited coal, lying below the sand stone; the coal itself is full of the impressions of *fossil Ferns*. The commonest sort is one with a lanceolate frond, from an inch to two feet long; but there are many others, more or less allied to the genera of *fossil Ferns* already described. In the sandstone may be seen *Ferns*, *Equisetaceæ*, *Calamites*, and trunks of trees; this formation bears the action of the atmosphere better than the argillaceous schist, which quickly falls to powder. North east of Glendon runs a range of hills and mountains of a totally different structure, they consist of porphyritic field spar, of which I do not remember to have ever seen specimens in the Museum. I think these hills are raised by the puddingstone, sand-stone and a conglomerate, which is rendered very hard by the igneous rock.

Northward, about thirty-six English miles from Glendon, we come again upon puddingstone, and mountains of basaltic formation, where I frequently saw imperfect zoolites. I explored Mount Royal, a spur of these mountains, attaining a height of three thousand feet, and itself one of the loftiest in this part of the colony. The centre and highest portion is basaltic, and the shoulders of sand-stone. The eastern declivity is covered with a most peculiar vegetation, called in the colony, *Mountain Brush*; and, in my opinion, much allied to the virgin forests of South America. The beautiful description by Mr. Waterton, in his *Wanderings in South America*, is applicable, word for word, to the *Mountain Brush* on Mount Royal, and equally so to the brushes on Bunya-Bunya. This author seems as if he might have had Mount excellent harvest of rare plants; but for want of books I have not yet correctly determined them.

Liverpool Plains, one hundred and fifty miles from Glendon, were my next destination, and I soon after climbed the summit of the Liverpool Range, and had the pleasure of seeing the basin of the Hunter and Goulburn Rivers below me to the east; and immense plains, stretching far westward. The Liverpool range forms an immense basaltic ring round the basin of the Hunter, which latter is filled with sand-stone, pudding-stone, and conglomerate, incumbent on a bed of coal. Towards the coast, may be seen several basaltic dykes; their course is from south-east to north-west; and it is easy to trace their connection with the Liverpool Range, and to find the centre for the antediluvian igneous actions in the Pacific Ocean. Near the Paterson rise mountains, containing some calcareous formation, among which I was assured that *Trilobites* and *Orthoceratites* have been found. I was not so fortunate as to see any, though I discovered several impressions of shells in calcareous sand-stone near the foot of Mount Royal. I have not yet explored the basin of the Goulburn River, which is bounded on the west by granitic mountains; but I hope to do so on my return from Moreton Bay.

The Liverpool plains afford much novelty and interest to the Botanist. When I first traversed this singular district, an immense number of *Compositæ* were in flower; and I made a small collection, limited by the want of plant papers, all I had being some newspapers which the Messrs. Scott kindly gave me. It seems likely that these plains were originally the bed of a lake, or a chain of small lakes, in which rose many islands, generally formed of sand-stone and clothed with a forest composed of various species of *Eucalyptus*. The *Callitris* is common and much employed for building bush huts. I passed the Mokka, the Peel, and two other rivers on my way, to settle awhile at the source of the Gwydir. All these so-called rivers are now but ponds in their nearly dried beds, and may be crossed almost dry shod.

The channels are, however, very broad and full of rolled pebbles; indeed, two separate channels may be often seen; the inner one, where there is yet some water, and which is fringed by a thick scrub on each side of *Casuarina* (Swamp oak); and the other filled with sand and rolled stones, and here and there a stout *Gum tree*, which has succeeded in braving the force of a stormy deluge, or of many weeks' incessant rain.

Between the Peel and the Wamoy rivers, the forest vegetation changes; and instead of travelling under *Spotted Gums*, *Box*, and *narrow leaved Iron Bark*, there is only seen a dense growth of *Silver-leaved Bark*, with its grey green foliage.

A range of trachytic mountains separates the Wamoy and Gwydir, near the sources of the Rocky Creeks, which is a stream tributary to the Gwydir. I examined these mountains as closely as my limited and rude instruments and means of investigation would permit.

Westward of these mountains may be seen the Big River, pursuing its course to join the Wamoy, which, lower down, is called the Bavan and still nearer to its mouth, the Darling. This and several other streams take their rise in the high table land of New England; and they all unite near the Darling, passing alike amid mountains of granite, basalt, and quartz, and being full of water in their upper part; but species of *Banksia*, the only one which is seen at a distance from the sea. The soil is very sandy, except on a few spots near the streams, where it is mingled with clay and vegetable earth; and here the *Apple tree* of Australia (*Angophora lanceolata*), thrives well. In the same way, as the *Bricklow* characterizes this part of the country, so does the *Myall* (*Acacia pendula*) seem confined to the plains of the Liverpool, Gwydir, and Big Rivers. It has *phyllodia* and pendant branches, which droop like those of a *Weeping Willow*, and its wood exhales a delicious perfume, resembling violets. The black people make their *boomerangs* of it; this warlike instrument seems to be in the hand of every native throughout the vast continent of Australia.

The Condamine is the first river that does not belong to the same genus, so to speak, as the Bavan or Darling; for it quickly takes a northward direction and probably pours its waters into the Gulf of Carpentaria, describing a curve similar to the Bavan. The Darling Downs begin after you pass the Condamine; they consist of undulated and open country; and their black, rich, and basaltic soil, is covered with different *Gramineæ*, one of which, the *Satin Grass* (*Anthistiria*), forms the principal food of the numerous flocks of sheep which rapidly increase in such a favourable locality. A new kind of *Gum tree*, called the *Moreton Bay Ash*, is frequent on the hills; it is distinguished by the lower part of its trunk being covered by a very broad scaly and black bark, while the upper portion is white, or greyish, and quite smooth. Here and there, on the plains, grows a *Xanthorrhœa* of a totally different character from *X. hastilis*, affecting a rich soil, while *X. hastilis* is only found on the poorest sand, and attaining 10-15 feet high and a foot in thickness.

In one of the streams, (Hudson's Creek) is a bed of coal—a remarkable circumstance, in an entirely basaltic soil. The alluvium of the valleys, and the river banks, especially those of the Condamine, contain fossil bones; but my endeavours to procure any proved fruitless. It is not, however, to be doubted, that the petrified bones, though not the teeth, of elephants, have been found here; but it would seem to me too hasty a conclusion thence to argue that this animal has ever inhabited New Holland in a living state. Rather, I should suppose, that the basaltic system has materially aided in heaving this continent above the waters; and it appears likely that the bones may have been deposited there while the continent was still in a submerged state, wafted thither from India or the large islands between that Peninsula and New Holland.

The Darling Downs are 1450 feet above the level of the sea; and the nights feel very chilly even during September and October. The slope down towards Moreton Bay is very rapid and similar to that of New England to Macquarrie Harbour. Immediately on entering the basin of the Brisbane River, vegetation assumes a more vigorous aspect, and the trees grow higher and at wider intervals. The sides of the mountains, the banks of the streams and rivers, are clad with almost impervious brushwood.

From Moreton Bay, in a northerly direction, Bunya-Bunya, my present sphere of action, lies sixty miles distant. This place is so named from the quantity of *Araucaria** or *Bunya Bunya*, which grows here in the mountain brushes. From this spot a quarter of an hour takes me to the virgin forest or to one of the creek bushes, flowing from the Bunya mountains, which latter separate the valley of the Brisbane peaks, south of the Bunya-range, and twenty English miles distant from the sea, each of them known to the natives by a distinctive appellation. The rock of the Puy de Dome and of Larconi is strikingly analogous to that of the glass-houses; and it is a remarkable circumstance that the general aspect and configuration are also much alike. Is it not a curious fact that I have not been able to detect the least appearance of metals of any kind, nor of precious stones? I have often seen mica as bright as gold dust, but nothing else; as if science were determined I should serve no other master, nor reap other resources than hers!

But how can I adequately convey, in words, any idea of the Bunya brush, especially of that majestic tree, the *Bunyia*, whose trunk looks as if designed for a pillar to bear up the arch of heaven, and on the fruits of which, the blacks come every year to regale themselves for two or three months (January, February, and March). It were equally hard to describe the variety of plants and shrubs which grow in this bush, covering, as it does, an extent upon the mountains equal to fifty English miles of length and breadth. The *Castanospermum australe** grows both here and near the river and streams, often attaining the height of eighty to one hundred feet, and producing its little bunches of red and yellow flowers, which sprout out of the wood at the same time as its compound and deep green leaves are developed near the tips of the branches. I met with another tree, of the same family, on the mountain, and not among the brush; its wood is very spongy, and the natives employ it to make their *halimans* or shields, the bark is covered with corky tubercles. The flowers are large and red, and the foliage ternate, each leaflet being petiolate and triangular with the angles rounded. I think it is an *Erythrina*.

There are two other *Leguminous trees* in the Brush, one adorned with rich racemes of yellow blossoms, and the other belonging probably to the *Mimoseæ*: its leaves bipinnate, and the leaflets elliptic-lanceolate, larger towards the end than those at the base, its pods twisted like a cork-screw. Four others are *Proteacæ*; viz.: the *Wairum*, with very rigid, long, and pinnate lobed foliage, the *Silver oak* (*Grevillea robusta*); the *Dulabi* with lanceolate leaves; and another, of which the lower surface is beautifully silvery. In all these four species the medullary rays are seen very distinctly through the wood. There are several singular trees belonging to the *Malvaceæ* and *Sterculiacæ*, one which the colonists call *Bottle tree*, because the trunk swells at about 3-4 feet above the ground; its bark is very hard, but the wood soft and spongy and full of juice. I have never seen the flower of this tree; but its fruit is a capsule, very similar to that of *Sterculia*; the blacks eat the seeds. Another, called *Bauni-Bauni*, forms a very large tree, with thick bark and spongy wood; it has very large and long slightly cordate leaves: the bark contains a gelatinous transparent substance, which adheres to the fingers. A small tree or shrub, with tubular scarlet blossoms, grows on the mountains among the rocks. On the sea-beach I saw a *Malvaceous shrub*, or small tree, producing foliage similar to a fig and large *Hibiscus*-like flowers: its wood is hard and of a lovely deep, velvetty, yellow at the heart. I also found two other species of *Hibiscus*, (*H. heterophyllus*), which grows almost everywhere in the colony, and of which the tenacious bark forms excellent

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* See Hook. Bot. Miscellany, vol. 1, p. 241, t. 51 and 52 for a figure and description of this plant.

Brush, also of the different kinds of wood, both from the Brush and the forest near Moreton Bay; and I have preserved the fruits in salt water and shall forward them with my specimens of rocks; for I think that geologists have no idea what a variety of formation exists in New Holland.

It has been proposed to undertake an expedition from Sydney to Port Essington, on the north coast of New Holland; but the government is too poor. Still it is much to be desired that it should be done, one time or other, either at the public expence, or by the efforts of the colonists.

We have seen the comet from the 3rd of March to April, 1843. All the country that I have traversed is, with slight exceptions, occupied by proprietors of sheep and cattle; their stations lying from twenty to thirty miles apart. Sometimes I have travelled upon my good Valparaiso mare, with no other companion than a faithful pointer bitch; and encamped alone at night on the mountain or in the forest, my own cook, groom, washerwoman, and naturalist. Everywhere the people, when I was fortunate enough to fall in with them, showed me great hospitality; and occasionally I have made acquaintance with some of the most respected persons in the colony; still, I have now and then been brought to such straights, that I have thought I must infallibly give up my studies and betake myself to some labour by which I might gain my bread. Your letter gave me much hope and pleasure. It is remarkable that I have gathered here a little plant, very similar to that you sent me from the marshes of Tuscany, *Hypericum quinquinervium.* Walt. Sarothra (Blentinensis, Sav.) I enclose in my letter some flowers of the tree that I have described as having ternate leaves, and its wood soft and spongy that is used by the blacks for their shields (*halimans*). These blacks are interesting creatures. Living much among them, I have had the opportunity of watching their peculiarities. Though now forming several powerful tribes, it cannot be doubted that they will soon disappear before the progress of civilization; and while philanthropy deplores this result, it is quite evident that none of the many means, hitherto employed to preserve them from destruction, is likely to prove successful. It seems fore-ordained that these races shall vanish from the earth to make way for the Caucasian race, though all are endowed with the same passions and the germs of similar virtues. From what I have seen, I conclude that the natives of this part, at least of New Holland, are by no means stupid or incapable of learning; but an education of two or three, or even twenty years, will not do much for them; it is the education of successive generations which is requisite; and alas! even ten years will have wasted these people nearly away, so fatal are the consequences of small pox, and other introduced maladies, so baneful the effect of spirituous liquors.

Sydney, July 12, 1844.

I have organized a party of six persons (four whites and two blacks); and with six riding horses and as many mules carrying provisions, we are about to start for Port Essington, distant 2000 English miles! Heaven only knows whether we shall ever accomplish this journey! I have sent a collection of plants to the museum of the *Jardin des Plantes*, which I hope may give satisfaction; but let it not be forgotten that these specimens were gathered in a country where I was

There are many geological specimens, which I send to Dr. Nicholson of Newcastle.

My herbarium is extensive, and contains a number of things which I do not know, and which I hope to study when I return from Port Essington. The *Leguminosæ* are a rich tribe; but I found very few *Proteaceæ* at Moreton Bay; not above four or five. You may observe, in my paper published in *Jameson's Journal*, that very fine *fossil-bones* are found on the Darling Mountains. I have sent a specimen to Mr. Richard Owen, who had kindly given me an introductory letter to Sir Thomas Mitchell of this colony.

Description of PODAXON PISTILLARIS, *Fries*; *by the Rev.* M. J. BERKELEY, (*with a Plate*, tab. X.)

PODAXON *Pistillaris* Fries. Syst. Myc. v. 3. p. 63.

Lycoperdon pistillare, *Linn. Syst. veg. ed.* 15, p. 1509. *Mant.* 313.

Scleroderma pistillare, *Pers. Syn.* p. 150.

Schweinitzia pistillaris, *Grev. in Edin. Phil. Journ.* v. 8, p. 256, tab. VI.

Mitremyces indicus, *Spreng. Syst. veg.* v. 4, p. 518.

HAB. Cape de Verd Islands. In an exposed valley near Porto Praya, growing amongst grass on the dry ground, *J. D. Hooker.*

Peridium 1¾ unc. longum, 1 unc. latum, discretum, basi a stipite laciniis paucis subacutis dehiscente, tenue, rigide papyraceum, primum croceum, demum fuligineum croceo-maculatum, squamis paucis latis vestitum. *Stipes* 5 unc. longus, sursum attenuatus, medio 2 lin. crassus, plus minusve bulbosus, e fibris tortis compositus, sericeus, squamoso-maculatus, massam fructiferam omnino percurrens, apice modice dilatato, intus pallide miniato-croceus, fistulosus, floccis laxis pallidis rigidiusculis chordam filamentosam formantibus farctus. *Capillitium* ellipticum, 1¼ unc. longum, ¾ unc. latum, miniato-ferrugineum, stipite percursum; flocci e stipitis filamentis reflexi, et demum pro magna parte quoad illum perpendiculares, inarticulati, rectiusculi, sursum attenuati ramosique, leviter sinuosi. *Sporæ* numerosissimæ, plus minusve conglomeratæ, irregulariter lato-ellipticæ, brevissime v. obsolete pedicellatæ; guttula globosa minima.

The discovery of *Podaxon pistillaris*, an Indian plant, in one of the Cape de Verd islands, was perhaps scarcely to be expected. It differs much in colour from the more sombre forms of the genus which occur in Egypt and along the coast through Senegal to the Cape of Good Hope. The genus occurs also in Australia.

Full grown specimens only of this very curious fungus have been hitherto obtained, which vary a little in intensity of colour. The original specimen described by Linnæus, exists still in the herbarium of the Linnæan Society. In some specimens the stem is much more decidedly bulbous than in others; in that from Porto Praya it is but slightly swollen below, and nearly solid at the base, rooting slightly into the soil and covered with a few cottony threads. In the Linnæan specimen, and that figured by Greville, the stipes is very decidedly swollen. The colour of the spores and capillitium almost exactly resembles that of the substance called *crocus*, by watch makers. The fruit bearing threads are reflected from the stem being continued from it, and if I have seen correctly

I find here and there a thread containing a single spiral filament, or itself breaking up into a flat spiral and twisted fillet. In that species too the flocci are in general much more undulated and sometimes even curled. There can be no doubt but that this, like other *Podaxineæ*, belongs to the division of sporophorous Fungi; but a proper comparison and correct appreciation of the different parts cannot be made without the examination of specimens in a much earlier stage of growth than any which have hitherto been submitted to the mycologist.—M.J.B.

Plate X., fig. 1, *P. Pistillaris nat. size*; f. 2. The same cut through vertically nat. size; fig. 3, flocci highly magnified; fig. 4, flocci and spores, highly magnified.

ALGÆ ANTARCTICÆ, *being characters and descriptions of the hitherto unpublished species of* ALGÆ, *discovered in Lord Auckland's Group, Campbell's Island, Kerguelen's Land, Falkland Islands, Cape Horn and other southern circumpolar regions, during the voyage of H.M. discovery ships "Erebus" and "Terror;" by* DR. J. D. HOOKER *and* W. H. HARVEY, ESQ. M.D.

(*Continued from p.* 276.)

CHLOROSPERMEÆ ANTARCTICÆ.

CLADOTHELE. *Hook. fil. et Harv.*

(Genus novum Siphonearum.)

Frons cylindrica, filiformis, viridis, solida, ramosa, extus papillosa. *Axis* cellulosa, densa, e cellulis magnis hyalinis vacuis, cellulam centralem radiatim cingentibus, formata. *Peripheria* cellulosa, cellulis coloratis (viridibus) pluriseriatis. *Utriculi* papillæformes, totam superficiem vestientes.—Alga *marina* Falklandica, *irregulariter ramosa, sordide viridis, ecorticata.*

63. Cladothele *Decaisnei.* Hook. fil. et Harv.

HAB. In the sea, at Berkeley Sound, Falkland Islands.

Radix fibrosa? *Frondes* 4-6 unc. altæ, cæspitosæ, filiformes, seta porcina crassiores, cylindraceæ, flexuosæ, plus minusve ramosæ, ramificatione valde irregulari. *Rami primarii* elongati, sæpe simplices, ramulis longis simplicibus sæpissime secundis curvatis v. incurvis vix attenuatis laxe donati. *Substantia* tenax. *Color* sordide viridis, siccitate cinerascens. Chartæ laxe adhæret.

A very curious plant, certainly related to *Codium*, especially to *C. simpliciusculum*, by the structure of the papillæ that cover the surface, and from which we have derived the generic name, but with an axis of very different structure from that of *Codium* or of any other siphoneous genus. It indeed more closely resembles that of *Polysiphonia*. In the specific name we wish to pay a deserved compliment to our friend M. Decaisne, who has thrown so much light on the affinities of the corallinoid *Algæ*, related to *Siphoneæ*.

64. Conferva *Falklandica*, Hook. fil. et Harv.; filis densissime cæspitosis flaccidis læte virentibus flexuosis intricate ramosissimis, ramis secundariis longissimis subsimplicibus undulatis flexuosis, ramulis patentibus distantibus brevibus secundis, articulis granuliferis diametro 3-5plo longioribus.

HAB. On muddy rocks, St. Salvador's Bay and Berkeley

Forms entangled, stratified tufts. Filaments much interwoven, twice as thick as those of *C. simpliciuscula*, very irregularly divided; the branches flexuous, and often naked, but here and there set with comb-shaped, involute ramuli, something in the manner of *C. flexuosa*. Colour dark and dull. Substance very rigid, when dry, and not adhering in the least to paper.

66. Conferva, *simpliciuscula*, Hook. fil. et Harv.; filis intricatis incomptis atroviridibus opacis rigidiusculis flexuosis capillaribus irregulariter subramosis, ramis valde remotis longissimis simplicibus, ramulis perpaucis patentissimis filiformibus simplicibus sæpe secundis, articulis diametro 2-3plo longioribus sacculo endochromatis donatis.

Hab. On sea-weeds, stones, and shells, Falklands and Cape Horn.

Forms entangled, dirty green tufts, without gloss. Filaments an inch or two in length, very distantly and irregularly branched, with a few distant ramuli. Allied to *C. riparia*, but more robust; also to *C. flagelliformis*, Suhr. but the habit is very different. It does not adhere to paper.

67. Conferva *ambigua*. Hook. fil. et Harv.; filis capillaribus rigidulis nigro-viridibus longis fluctuantibus basi adnatis? intertextis simplicibus v. hic illic spurie? ramosis et radicantibus, nunc processibus lateralibus anastomosantibus diametro 2-3plo longioribus opacis sacculo endochromatis repletis.

Hab. In the sea, Christmas Harbour, Kerguelen's Land.

Filaments 4-5 inches long, interwoven at base into a dense stratum, above which the long apices float freely in the water.

68. Conferva *angulata*, Hook. fil. et Harv.; fluitans vel reptans, filis simplicibus tenuissimis brevibus strictiusculis hic illic incrassatis et angulatis, ad angulum radiculam vel ramulum abnormalem emittentibus, articulis diametro 4-5plo longioribus coloratis, endochromate siccitate contrahente.

Hab. Fresh water, Kerguelen's Land.

Near *C. bombycina*, but distinguishable by its greater straightness and rigidity, the angular curves, incrassations and radicles. The incrassations are scarcely of the character of the inflations in Mr. Hassall's genus "*Vesiculifera.*"

69. Conferva *Sandvicensis*, Ag? filis tenuissimis simplicibus longissimis in funiculos flavo-virides implicatos intertextis, articulis diametro duplo longioribus.—*Ag. Syst. p.* 92.

Hab. Falklands, in rills of fresh water.

Rope-like bundles 12-14 inches long. Filaments exceedingly slender, not more than one-third the diameter of those of *C. rivularis*, of which this species has very much the habit. Agardh's character of his *C. Sandvicensis* agrees so well with our specimens that we think it probable our plants may prove the same.

70. Draparnaldia? *pusilla*, Hook. fil. et Harv.; filis pusillis densissime cæspitosis gelatinosis vage ramosiusculis flexuosis, ramulis perpaucis simplicibus brevibus, articulis coloratis luteo-viridibus.

Hab. Falkland Islands, on the roots of an umbelliferous plant in fresh water.

Filaments a quarter of an inch long, investing the roots on which they grow with a yellow, green down. The genus is somewhat doubtful; but we think it, at least, strongly

Hab. Kerguelen's Land, in alpine rivulets.

Tufts extensively spreading, about ½ an inch high, of a very dark, blackish olive colour. Threads much thicker than those of *C. distorta*, very flexuous, cohering often for their whole length in crisped bundles. Colour, under the glass, glaucous, with a golden tint.—A very pretty species.

73. Oscillatoria *purpurea*, Hook. fil. et Harv.; strato gelatinoso tenaci siccitate translucente purpureo, filis violaceis omnium tenuissimis dense intertextis curvatis longe radiantibus, striis inconspicuis.

Hab. Kerguelen's Land, in rivulets among the hills, 3,700 feet.

Covers mosses and water plants, with a gelatinous, purple pellicle, more transparent than common in the genus. In a dry state the filaments, which, under the highest power of the microscope are seen as thin lines, are of a fine purple colour, and fringe the stratum to nearly ¼ inch depth.

74. Sphærozyga *tenax*, Hook. fil. et Harv.; strato fluctuante definito gelatinoso lobato tenaci æruginoso, filis densissime intertextis flexuosis sub lente glauco-viridibus moniliformibus hic illic articulo majori elliptico interruptis.

Hab. Falkland Islands, in fresh water.

With a gelatinous stratum, nearly as firm as that of *Nostoc cæruleum*, this presents all the essential characters of *Sphærozyga*; to the naked eye it resembles an *Oscillatoria*. It is a species of large size.

75. Ulva *tesellata*, Hook. fil, et Harv.; fronde (mediocri) siccitate rigidiuscula tenuissima membranacea foliacea fusco-viridi expansa in lacinias plures undulato-crispas fissa tesserato-areolata, areolis quadratis lineis hyalinis circumscriptis, granulis magnis quaternis.

Hab. Kerguelen's Land, on rocks in the sea.

Frond 1-2 inches high, dull green, leafy. Structure very similar to that of *U. crispa*, but the habit and habitat is that of *U. latissima*. Some of our specimens are profusely covered with sphærical bodies, immersed in the frond, and resembling the capsules of a *Nitophyllum*, which probably are incrassations, caused by the puncture of some minute animal. They appear to be hollow, but their walls are greatly thicker than the rest of the frond. Under the microscope, this species has the character of a fine piece of mosaic pavement.

76. Palmella? *anastomosans*, Hook. fil. et Harv.; viridis incrustans furfuraceo-rugosa carnoso-membranacea e cellulis hyalinis in fila anastomosantia foliaque clathrata coagulatis composita, granulis binis oblongis viridibus.

HAB. Kerguelen's Land, on rocks in crevices.

It is difficult to say whether this species should be referred to *Palmella* or to *Ulva*. It has a firmer and more membranous substance than most *Palmellæ*, and a thicker frond than any *Ulva* with which we are acquainted. Yet the frond seems composed of a single stratum of cellules, and therefore perhaps it might be admitted into *Ulva*, where it would stand near *U. furfuracea*.

DECADES OF FUNGI; *by the* REV. M. J. BERKELEY, M.A. F.L.S.

(*Continued from p.* 73.)

DEC. VIII.—X. AUSTRALIAN AND NORTH AMERICAN

number of curved, opake, sporidia, which are far larger than in the neighbouring species.

Resembling *S. lata*, but distinguished by the much larger, opake sporidia, which are contained in clavate asci. In *Sphæria lata* the asci are much more slender, and the sporidia minute and pellucid.

* S. *rosella*, A. and S.—*Drumm.* n. 185.

On charcoal.

72. S. (Villosæ) *pulvinulus*, n. sp.; sparsa, subglobosa demum collabenti-depressa astoma hirsutiuscula atra; sporidiis irregulari-subellipticis pluriseptatis; ostiolo obsoleto.—*Drumm.* n. 225 (in part).

On dead wood.

Scattered, black, subglobose, at length collapsing and depressed, clothed with short pubescence. Sporidia irregular, subelliptic, divided by transverse and longitudinal septa.

This species differs from all the species of the tribe with which I am acquainted in its sporidia. It resembles most *Sphæria hirsuta.* The sporidia are just like those of *Sph. Laburni.*

* S. *sanguinea*, Sibth.—*Drumm.* n. 225 (in part).

* β *media.*—*Drumm.* 212 (in part).

73. S. (Denudatæ) *inspersa*, n. sp.; conferta et sparsa, minor, atra; peritheciis subglobosis rugulosis rigidiusculis; ostiolo obsoleto.—*Drumm.* n. 212 (in part).

On dead wood.

Either scattered or forming crowded patches on bleached wood. Perithecia minute, globose, jet black, slightly rugose astomous. Asci linear; sporidia elliptic, brown.

Nearly allied to *Sph. pulveracea*, but differing very much in the spores, which in that species are fusiform, and divided into four distinct cells.

* Hysterium *elongatum*, Wahl.—*Drumm.* n. 225 (in part.)

74. Agaricus (Clytocybe) *ochro-purpureus*, n. sp.; pileo subhemispherico demum depresso carnoso compacto lento pallide alutaceo leviter purpurascente; cute facile secernibili; margine inflexo primum tomentoso, mycelio albo. Stipite

pallidiore hic illic purpurascente, medio tumido. Lamellis crassis non connexis purpureis postice latioribus decurrentibus.

On clayey soil in woodlands. *T. G. Lea, Esq.* Ohio, n. 261.

Pileus 2 inches across. Stem 2½ inches high, ¾ of an inch thick in the centre, solid, above deflexo-squamose, occasionally equal.

This species resembles in most points *Ag. tyrianthinus;* but the gills are thick and distinct, resembling those of *Ag. laccatus*, and the mycelium (at least in the dry plant,) is white. The spores when dry are of a palish yellow, but Mr. Lea in his notes describes them when fresh as white.

This, and the greater part of the following species, are described from a very rich collection of Fungi, consisting of above 280 species, from the neighbourhood of Cincinnati, kindly sent to Sir W. J. Hooker by T. G. Lea, Esq., and accompanied in many instances by very copious and valuable notes. The collection has furnished a large quantity of interesting species, first made known in his memoirs by Schweinitz, some very rare European forms, and a considerable number of new species, the most important of which are here described. I have myself corresponded on the sub-below clothed with matted, tawny down, and strigose flocci, stringy, attached to dead leaves, &c. by a creeping, strigose, orange mycelium. Gills distinct, broad, ventricose, remarkably sinuated behind, adnexed, orange, with a vermillion margin.

Resembling somewhat *Ag. coccinellus*, but probably more closely allied to *Ag. pelianthinus*. The pileus when dry has somewhat the appearance of that of *Ag. palmatus*, in consequence of its viscid cuticle. It must be a most beautiful species when fresh. Mr. Lea mentions that the spores are orange. I do not find this to be the case in the specimens; and as the spores, in well-dried *Cortinariæ*, are always visible enough, I think there must be some mistake in this point. I have little doubt myself that the species belongs to the division *Mycena*.

76. Agaricus (Galera) *mucidolens*, n. sp.; olidus, pileo pluteiformi lobato glabro nitido viscido fuligineo; stipite fibrilloso, lamellis liberis.

On rotten trunks, in woods, Ohio, April, n. 215. *T. G. Lea. Esq.*

Pileus 2-3 inches broad, of a dull, smoky brown, viscid. Stem 2 inches or more high, clothed with brownish fibres. Gills free. Spores dull, ferruginous, broadly subcymbiform, with a small nucleus. Smell, like that of decayed cheese.

Allied to *Agaricus reticulatus*, but differing in several points, and especially in its dull, ferruginous, not croceo-ferruginous spores.

77. Lentinus *sulcatus*, n. sp.; parvus, pileo primum subconico, demum hemispherico, carnosulo diffracto-squamoso sericeo-virgato rufescente, margine sulcato; stipite centrali brevi solido subconcolore furfuraceo; lamellis distantibus latiusculis subcrassis postice emarginatis pallidis.

From the cracks of dry, hard, fence rails, May, Ohio, n. 212. *T. G. Lea, Esq.*

Pileus not ¾ of an inch broad, hemispherical or nearly so, at first slightly conical, of a more or less rufous tint, broken up into irregular scales, sericeo-virgate; sometimes the scales are more or less indistinct, fleshy, margin deeply sulcate, at least when dry, the raised interstices darker, which gives the pileus a very neat appearance. Stem about ¾ of an inch high, 1½ line thick, often slightly attenuated downwards, solid, of the same colour as the pileus, furfuraceous, sometimes confluent. Gills distant, broad, subventricose, emarginate behind, very slightly annexed, pallid, rather thick, indistinctly toothed.

This very pretty species is allied to *Lentinus scleropus*, *&c.* It appears to be undescribed and there can be no difficulty in recognising it. In consequence of the striate and sulcate margin, it bears at first sight a certain resemblance to *Agaricus alutaceus.*

* Lentinus *tigrinus*, Fr. A most remarkable state of this species has been found by Mr. Lea (n. 245) in which the gills have anastomosed, until the whole pileus and gills have become a hard, solid mass. At first sight it has quite the appearance of a new genus; but I am convinced that it is merely a very curious, but monstrous state of our European species.

78. Polyporus (Mesopus) *tabulæformis*, n. sp.; pileo orbiculari centro crasso margine tenui sublobato subzonato prolifero-rugoso velutino hic illic fasciculato-piloso ferrugineo-

Closely allied to *Pol. holophæus*, Mont. and *Pol. hispidus*, Fr., but especially to the former. The colour of the pileus and pores is, however, far lighter than in that species, and the habit different. The substance of the pileus has not at all the yellow tint of that of *Pol. hispidus*, and the border of the pileus scarce exceeds ⅛ of an inch in thickness, and is sometimes not half so thick; the habit is very much that of *Hydnum ferrugineum*.

79. Polyporus (Apus) *conglobatus*, n. sp.; pileis suberosis erumpentibus arctissime imbricatis massam globosam efformantibus, arcuatis, rugosis fusco-purpureis margine pallido; postice leviter laccatis; hymenio brunneolo; poris punctiformibus; dissepimentis obtusissimis.

On beech bursting through the bark, Ohio, n. 117. *T. G. Lea, Esq.*

Forming a compact, globular body, 4-5 inches in diameter, consisting of closely pressed, curved, imbricating pilei, united at the base into a mottled mass, consisting of bark highly impregnated with the mycelium, purplish brown behind, where it is laccate, with a dark bloom, pallid in front, substance corky, rather soft, ferruginous. Hymenium concave, scarcely conspicuous without dividing the pilei, brown. Pores very minute, punctiform, pale within; interstices perfectly even, obtuse.

The mass behind is sometimes perforated by the larva of some insect, which makes large channels through it. It is, I believe, sweet-scented when fresh.

This is one of the most remarkable species with which I am acquainted, and very distinct in habit from every species except *Pol. graveolens*, Schwein. The section is very peculiar, and quite different from that of most other species. The inner substance of the bark, as it were, swells till at last the outer layer is ruptured, and the mass of pilei protruded, which is continued from the substance of the bark.

Schweinitz has described no Polyporus at all resembling it, with the exception of *Pol. graveolens*, from which it differs in its pilei, not being spathulate, its softer substance, and larger pores, which, though minute, are visible to the naked eye. *Pol. graveolens* occurs on the different species of oak, this on beech.

80. Polyporus (Apus) *obductus*, n. sp.; pileo sessili reniformi lobato tenui glaberrimo pellicula gelatinoso-cartilaginea flavida vestito, sicco fragilissimo, contextu albo; hymenio albo, poris laceratis, dissepimentis tenuissimis.

British North America. *Dr. Richardson*, 1827.

Pileus 5 inches broad, 2½ inches long, stemless, reniform, with a few rounded lobes, thin, about 1¼ line thick; substance white, vanishing completely towards the margin, clothed with a yellowish, gelatinoso-cartilaginous pellicle, which under a lens is slightly wrinkled, perfectly smooth, very brittle when dry, margin extremely thin. Pores white, finely toothed, dissepiments extremely delicate, about ¾ of a line deep.

A very curious species, whose nearest affinity is perhaps with P. *aureolus*. When fresh, it is probably a juicy species, though very rigid and brittle when dry. The coat of the pileus is apparently nearly of the same nature as that of *Agaricus mastrucatus*.

81. Polyporus (Resupinatus) *niger*, n. sp.; resupinatus

the edge, and the substance and exposed portion of the pileus are dark brown. The dissepiments, also, in Dr. Montagne's fungus are thicker.

There is always some doubt about resupinate species, if they exceed a line in thickness. There is, however, no known species of which this can be a state. The same also may be said of Dr. Montagne's *Pol. tephroporus*, though it comes very near to resupinate specimens of *Pol. caperatus*, which I have from British Guiana.

82. Trametes *incana*, n. sp.; pileo laterali duro suberoso explanato dealbato glabro, contextu albo; stipite brevissimo disciformi; hymenio albido; poris parvis subrotundis, acie obtusa.

On dead trunks, Ohio, n. 225. *T. G. Lea, Esq.*

Pileus 8 inches broad, 4½ inches long, attached by a very short, lateral disciform stem, flabelliform, smooth, opake-white, zoneless, or with a few obscure depressions, and short, radiating grooves; substance hard, corky, white, 1½ inch thick; margin subacute. Hymenium even of a very pale ochre; pores small, one-sixtieth of an inch in diameter, mostly roundish, here and there forming linear or curved sinuses. Sometimes the stem is accidentally elongated.

Resembling somewhat *Dædalea ambigua*, and certain states of *Lenzites repanda*, but distinct from either.

83. Dædalea *ambigua*, n. sp.; pileo suberoso crasso convexo azono dealbato glabro; hymenio subalutaceo; poris parvis sinuosis acie obtusa.

On dead trunks, Ohio, n. 117. *T. G. Lea, Esq.*

Pileus sessile, dimidiate, 6 inches broad, 3 inches long, 1½ inch thick, convex, zoneless, opake-white, as if white-washed, smooth, or most minutely pubescent in the younger parts only, of a hard, corky texture, white within. Margin at first very obtuse. Hymenium rather concave, of a pale tan-colour, pores small, narrow, sinuated, moderately deep, dissepiments obtuse.

This species approaches closely to some states of *Lenzites repanda*, Fr., but it is a true *Dædalea*, the pores being at first punctiform, and not radiating from the centre. There is no species of that genus with which it can be confounded.

It certainly is very near to the foregoing species, but the pores seem to me to be of a different nature, not to mention the difference of habit. Mr. Lea also distinguished them, which has confirmed me in my conclusions, which have been formed after much deliberation. I ought, however, to state, that Dr. Montagne, to whom I showed two of the specimens, was inclined to think that they were different states of one species.

84. Cyclomyces *Greeneii*, n. sp. pileo spongioso-suberoso orbiculari undulato sublobato zonato tomentoso cinnamomeo marginem versus tenuem lineato; stipite centrali obconico concolore; lamellis demum subcinereis. (Tab. XI.) Amongst dead leaves. Tewkesbury, Massachusets. *B. D. Greene*, Esq.

Pileus above 3½ inches in diameter rather thin except in the centre orbicular slightly lobed and undulated, here and there irregularly tuberculate concentrically zoned of a rich ferruginous cinnamon, clothed with short velvety down, which vanishes in parts towards the margin, where it is marked with little linear grooves and raised lines, interspersed with minute fascicles of down; substance rather soft, marked with spathulato-flabelliformibus zonatis hirsutis; hymenio ochraceo; aculeis longiusculis acutis carneis, siccis ochraceis.

On a dead red-oak. *T. G. Lea, Esq*. Jun. Ohio, No. 42.

Pilei imbricated, laterally confluent ½ an inch broad, ¾ of an inch long, spathulato-flabelliform fixed by a narrow base, which is mostly more or less distinct, coriaceous clothed with white or slightly tawny short woolly hairs. Hymenium bordered; aculei acute, sometimes slightly compressed above, flesh coloured, ochraceous when dry.

A pretty species allied to H. *ochraceum*.

86. Hydnum *stratosum*, n. sp. pileis resupinatis, margine libero, demum stratosis e processibus rigidis ramosis extus stuppeis formatis; aculeis longis rigidis acuminatis spadiceis hic illic cinereis.

On a dead trunk. Ohio. June. *T. G. Lea, Esq*. No. 279.

Pilei resupinate with a narrow lobed border spreading for three or four inches over the matrix, consisting of repeatedly branched rigid brown processes resembling some Cornicularia, which are clothed above with grey or ferruginous tow-like fibres. Aculei rather long rigid sharply acuminate brown varying to cinereous, at length stratose.

This is one of the most remarkable species with which I am acquainted. It resembles in many respects *Hydnum parasiticum*, but has not like that a coriaceous pileus. The whole substance indeed consists merely of rigid branched processes which are partially covered above with coarse pubescence, so that the pileus might perhaps be described as repeatedly branched. These processes are, however, combined into a lobed stratum. I do not know any other species with which it can be compared, except perhaps as Dr. Montagne suggests his *Hydnum pteruloides*, but that he is now inclined to consider as merely a state of *Trametes Hydnoides*, whereas the present is undoubtedly a perfect plant.

87. Hydnum *Ohiense*, n. sp. resupinatum membranaceum a matrice hic illic secernibile pallide flavum; aculeis longis acutissimis aquosé pallido-fuscis subfasciculatis.

On the under side of a rotten log. Ohio. March. *T. G. Lea, Esq.* No. 41.

Spreading for several inches, entirely resupinate membranaceous partially separable from the matrix; aculei somewhat fasciculate 1-2 lines long of a watery pale brown, very slender at the apex.

This species resembles Hydnum *fernandesium*, Mont. (H. *membranaceum*, var. *stenodon*, Mont. Prodr.) from which it differs in its shorter less crowded aculei. The margin too in the Juan Fernandez species is more distinct and the whole fungus more luxuriant.

88. Scleroderma *Texense*, n. sp. subglobosum squamis supra liberis basi adnatis imbricatis vestitum mycelio infra medium affixo anostomosante subfultum; cellulis persistentibus sporisque fuligineis.

On the ground. Texas. *Mr. Drummond.*

Subglobose rather depressed 1¼ inch in diameter at the base, about 1 inch high clothed with scales imbricating upwards from the base of a pale olive brown externally, yellowish within, and themselves often covered with smaller scales or with furfuraceous particles; peridium hard rigid brown; cells persistent fuliginous with a slight olive tint; spores globose granulated. Mycelium springing from below

On bark. Ohio. No. 242. *T. G. Lea, Esq.*

A minute species ⅓ of a line in diameter with the stem ⅔ of a line high. The appearance of the surface of the peridium is like that of a little globule of mother of vinegar, white and curdled.

90. Macrosporium *punctiforme*, n. sp. soris minutis sparsis punctiformibus; sporis obovatis; filis simplicibus obtusis subflexuosis. (Tab. XII, *f.* 1).

On dead stems of *Rubus occidentalis.* Ohio. No. 166. *T. G. Lea, Esq.*

Forming minute black scattered dots; stroma reticulate; flocci erect simple slightly flexuous sparingly septate sometimes decumbent and then proliferous. Spores obovate at first simple and pellucid, then furnished with one or two transverse septa, at length acquiring a darker tinge and a few oblique or vertical septa.

Tab. XII, fig. 1. *a.* Flocci. *b.* Portion of stroma with flocci springing from it. *c.* Spores in various stages of growth. *d.* Single spore. All more or less *magnified.*

91. Macrosporium *pinguedinis*, n. sp. latissime effusum, floccis tenuibus erectis simplicibus septatis; sporis lanceolatis quandoque obovato-oblongis. (Tab. XII, *f.* 2).

On grass on which animal fat had been poured. Ohio. No. 146. *T. G. Lea, Esq.*

Completely investing the culms and leaves of the matrix. Flocci erect flexuous septate; spores brown lanceolate obtuse transversely septate with here and there a vertical septum; sometimes obovate-oblong.

Macrosporium, Fr. is the same with *Septosporium*, Corda taking *Helminthosporium Cheiranthi* as the type of the genus which indeed differs very slightly from *Helminthosporium.*

Tab. XII. fig. 2. *a.* Flocci and spores *magnified.* *b.* Spore highly *magnified.*

92. Sporidesmium *concinnum*, n. sp. sporis primum brevissime pedicellatis oblongis obtusis nitidis fenestratis. (Tab. XII. *f.* 3.)

On dead wood. Ohio. No. 168. *T. G. Lea, Esq.*

Forming minute jet-black crowded sori which are at length almost confluent. Stroma consisting of decumbent branched threads. Spores at first consisting of a pellucid simple obovate cell, which gradually acquires an oblong form (the peduncle being entirely obliterated) and divided regularly by numerous transverse and vertical septa; occasionally a few of the lower septa are oblique.

A very pretty object under the microscope. The true *Sporidesmium atrum* which appears to be a rare species also occurs at Ohio. It was, however, common at Prag as M. Corda informs me, till the wooden palisades were destroyed.

Tab. XII, fig. 3. *a.* Flocci. *b.* Spores in various stages of growth. *c.* Portion of spore. All more or less *magnified.*

93. Oidium *simile,* n. sp. Effusum submembranaceum fulvum filis ramosiusculis; articulis ultimis subglobosis. (Tab. XII. *f.* 4.)

On decayed wood, Jan. Ohio. No. 147. *T. G. Lea, Esq.*

Forming a deep tawny pulverulent but somewhat membranaceous stratum on decayed wood which to the outward eye exactly resembles *Oidium fulvum,* but distinguished by its subglobose not oblong articulations. The fructifying joints arise either from a direct transformation of the ultimate joints, Tab. XII, fig. 5. *a.* Flocci. *b.* Spores. More or less magnified.

95. Cronartium *asclepiadeum*, Kze. var. *Thesii*, maculis obliteratis, tuberculis parvis sparsis, sporis subglobosis, peridiis elongatis incurvatis extus minutissime ramentaceis.

On *Thesium umbellatum*. Ohio. No. 205. *T. G. Lea, Esq.*

Scattered over the under surface, not aggregate as in C. *asclepiadeum*, where they seem usually to be confined to a determinate spot; peridia more minute; cells of the peridium longer; spores not so much elongated.

It is possible that this may prove a distinct species, but the dry specimens exhibit no sufficient characters.

96. Sphæria (Lignosæ) *tinctor*, n. sp. effusus innatus planus sculpturam matricis e mycelio miniatæ superficie referens, intus extusque ater; peritheciis elongatis, collo brevi, ostiolo inconspicuo.

On dead *Platanus occidentalis* (button wood). Ohio. No. 128. *T. G. Lea, Esq.*

Forming a black widely effused stratum exhibiting all the markings of the matrix which is tinged to the depth of a quarter of an inch orange-red, black both within and without. Stroma hard ¼ a line or more thick; perithecia vertical elongated with a very short neck; ostiola not visible externally, even under a lens.

Analogous to *Sph. hypomilta*, Mont. but by no means allied. It is rather related to *Sph. stigma*. The matrix is quite distinct from the wood though it exhibits on its surface all its markings, otherwise the species might be placed in the section Concrescentes of which it has the habit.

97. Sphæria (Circumscriptæ) *Leaiana*, n. sp. innata, stromate pallido laxo e cortice et ligno linea circumscripto, peritheciis ellipticis ostiolis subconfertis elongatis lineolatis granulatis, sporidiis minimis curvulis.

On bark of dead Hornbeam. Ohio. No. 130. *T. G. Lea, Esq.*

About ¼ a line in diameter. Perithecia not numerous circinating elliptic seated on a pale stroma of rather a loose texture; ostiola forming a little tuft rather elongated umbilicate finely grooved, granulated. Asci lanceolate; sporidia minute carved like those of S. *verrucæformis.*

A very neat species distinguished at once from *Sp. carpini* by its prettily granulated ostiola; but above all by its minute curved not lanceolate sporidia. It approaches also S. *decipiens,* D. C. especially as regards the ostiola, but not to mention the difference of habit, the spores in that species are dark and elliptic with one side flat, not colourless and curved.

98. Sphæria (Circumscriptæ) *fulvo-pruinata,* n. sp. pustulata, subangulata basi effusa; peritheciis oblongis collo elongato; stromate discoque ostiolis punctato fulvis; sporidiis ellipticis uniseptatis.

On dead *Platanus occidentalis.* Ohio. No. 126. *T. G. Lea, Esq.*

Forming somewhat angular pustules about a line broad rather effused at the base as seen through the thin cuticle; disc angular tawny pulverulent pierced by the black punctiform ostiola; stroma tawny like the disc; perithecia globose. Asci linear, sporidia elliptic uniseptate with a single globose nucleus in each cell.

99. Sphæria (Confluentes) *rhizogena,* n. sp. suborbicularis

differs materially in structure. Its nearest ally appears to be S. *Gleditschiæ.*

From Sph. *melogramma* as published by Mougeot it differs in its pale stroma and elliptic not fusiform sporidia. In the plant as published by Fries, No. 441, the sporidia are curved.

100. Sphæria (Byssisedæ) *rhodomphala*, n. sp. peritheciis demum confertis minutis globosis umbilicatis atris plus minus, præsertim circa ostiolum obsoletum, miniato-pruinatis, sub lente scabriusculis subiculo fusco insidentibus.

On rotten wood. Ohio. No. 135. *T. G. Lea, Esq.*

Scattered, at length much crowded, either free or seated on a matted brown subiculum; perithecia globose at first powdered with vermilion which is more or less persistent in the centre; ostiolum simple umbilicate; asci somewhat lanceolate pedicellate; sporidia lanceolate constricted in the centre with a single septum, and containing one or sometimes two nuclei.

A pretty species but rather difficult to place, as the subiculum is sometimes entirely wanting and the perithecia are rather pulverulent than villous. It has almost equal claims to take its place amongst Denudatæ, Villosæ and Byssisedæ.

ERRATA.

Vol. 3, p. 337, for " Buck Bean," read " Garden Bean."

Vol. 4, p. 29, for " Brongniart," read " Jussieu."

Fungi described in the First Century, now completed.

Agaricus *allantopus*, B.
— *crinalis*, B.
— *Drummondii*, B.
— *lampas*, B.
— *Leaianus*, B.
— *lepton*, B.
— *mucidolens*, B.
— *muculentus*, B.
Agaricus *ochro-purpureus*, B.
— *nidiformis*, B.
— *radicatus*, Relh. var. *superbiens*, B.
— *rhizobolus*, B.
— *xanthocephalus*, B.
Aseroe *viridis*, B. & Hook, fil.

Auricularia *minuta*, B.
Boletus *alliciens*, B.
— *marginatus*, Drumm.
Bolbitius *mitræformis*, Harv.
Bovista *lilacina*, Mont. & B.
Broomeia *congregata*, B.
Calocera *guepinioides*, B.
Cantharellus *capensis*, B.
— *viscosus*, B.
Clathrus *pusillus*, B.
Clavaria *setulosa*, B.
Corticium *radicale*, B.
— *vinosum*, B.
Cortinarius *erythræus*, B.
Cronartium *asclepiadeum*, Fr.
— var. *Thesii*, B.
Cyclomyces *Greeneii*, B.
Dacrymyces *rubro-fuscus*, B.
Dædalea *ambigua*, B.
Didymium *rugulosum*, B.
— *scrobiculatum*, B.
Dothidea *appendiculosa*, Mont.
Hymenogramme *Javensis*, Mont. & B.
Ileodictyon *gracile*, B.
Irpex *incrustans*, Mont. & B.
Lentinus *sulcatus*, B.
Licea *applanata*, B.
Macrosporium *pinguedinis*, B.
— *punctiforme*, B.
Mitremyces *luridus*, B.
Mycenastrum *phæotrichum*,
Mystrosporium *pulchrum*, B. & Corda.
Oidium *simile*, B.
Paxillus *Eucalyptorum*, B.
Peziza *Drummondii*, B.
Phallus *curtus*, B.
Physarum *flavicomum*, B.
Polyporus *brunneolus*, B.
— *cladonia*, B.
— *compressus*, B.
— *conglobatus*, B.

Scleroderma *Texense*, B.
Secotium *coarctatum*, B.
— *melanosporum*, B.
Septonema *spilomeum*, B.
Sistotrema *autochthon*, Mont. & B.
Sphæria *capnodes*, B.
— *elevata*, B.
— *fulvo-pruinata*, B.
— *inspersa*, B.
— *Leaiana*, B.
— *pulvinulus*, B.
— *rhizogena*, B.
Sphæria *rhodomphala*, B.
— *tinctor*, B.
Sporidesmium *concinnum*, B.
Stereum *illudens*, B.
— *obliquum*, Mont. & B.
Thelephora *radicans*, B.
Trametes *incana*, B.

APPENDIX.

Myriangium *Duriæi*, Mont. & B.
— *Montagnei*, B.

On a minute Fungus, PODISOMA MACROPUS, *growing on* Juniperus Virginiana *in North America, by* DR. WYMAN, *in a letter addressed to Sir W. J. Hooker*; *with some additional remarks by the* Rev. M. J. BERKELEY.

(With a figure, TAB. XII. *f.* 6.)

Boston, United States,
May 8th, 1844.

Dear Sir,

I have taken the liberty of sending you the following notice of a microscopic fungus, to which my attention was first called while engaged in examining the dense tufts with acerose leaves which are abundantly met with in the *Juniperus Virginiana* of this neighbourhood. On investigating the peculiar growth last mentioned, minute specks were noticed in every instance, on the stems of the twigs of which they are composed, and almost never elsewhere except in the excrescence known as the "*Cedar apple.*" These specks are of a reddish colour, slightly elevated, about ½ to 1 line in diameter, and in part concealed by a scale of cuticle, under which they are developed, but which is ruptured as they increase in size. Having detached one of these masses, and placing it under the field of a microscope, I found it to consist entirely of immense numbers of minute fungi allied to the genus *Puccinia,* characterized by a slender filament or pedicle, on the summit of which are two cells of the form represented in the adjoining figure. Each cell is of a triangular form, the two being united at their bases. Internally these cells are filled with yellowish green granules, besides which there exists a transparent spherical body, which I suppose to be a nucleus or cytoblast. The accompanying figures will give you a better idea of the fungus than any verbal description. The existence of two distinct cells is easily demonstrated by macerating the specimen for a short time in water, when they readily separate from each other, and in some instances I have noticed the projection of a tube not unlike a fallen tube, from one of the angles. I have made numerous searches for these parasites, but have almost never detected them, except in the localities above mentioned, viz: the tufts composed of acerose leaves and the "Cedar apple." The tufts with acerose leaves are not identical as I believe, with the variety of form which occurs in the young shoots of the J. *virginiana,* described in Bigelow's Med. Botany and by yourself in the Flora Boreal. Americana, also in the description of the J. *burmudiana* in Lond. Journ. of Botany small point varying in length, this process consists entirely of fungi which are developed in a cell, the external coverings of which are ruptured as the fungus increases in size. In both the situations, when wet, they absorb, moisture very rapidly, swell and become much elongated. In the " *Cedar apple,*" they often project to the distance of an inch, and hang down like tassels. In localities where the juniper is abundant these excrescences exist in large quantities, so that after a rain the trees have the appearance of putting forth large numbers of flowers, in consequence of the sudden elongation of these collections of fungi.

The universal presence of this fungus in the tufts of acerose leaves above described have almost led me to the belief that they stand in the relation of cause and effect, though it must be obvious that the evidence is still far from satisfactory. Observations in other localities and other species will perhaps decide.

It does not appear from any description which I have seen, that the acerose leaves described by botanists are confined to masses or tufts as I have stated above; but on the contrary I infer that they are scattered about on different branches, or as Bigelow says are met with on young vigorous shoots.

Should the facts communicated in this letter prove new or in any way interesting I beg you would make any use of them which you may think best; if not, please excuse the liberty I have taken in addressing you at this time.

With great respect,

I am truly yours,

JEFFRIES WYMAN, M.D.

To Sir W. Jackson Hooker.

Tab. XII, *f.* 6.

a. Magnified drawing of the sporidia. *b.* The same, *more highly magnified.* *c.* The two cells in part separated after maceration in water. *d.* Cells completely detached. *e.* Sporidia germinating. *f.* Section o 1Cedar apple, shewing processes formed by sporidia with the peduncles, (natural size). *g*. One of the masses *magnified*, shewing the ruptured cell (from surface of Cedar apple).

The fungus described by Dr. Wyman is clearly *Podisoma macropus*, Schwein. in Am. Phil. Trans. vol. 4, p. 307. No figure has hitherto, as far as I know, been given of it. Dr. Wyman's communication, therefore, though not containing any absolute novelty must be regarded as very acceptable. As Dr. Schweinitz's notes on the subject do not appear to be in the hands of many botanists, we think it may be agreeable to our readers to have a translation of them.

It may be as well to state first, that the species was published in the earlier memoir on the fungi of Carolina, p. 74, under the name of *Gymnosporangium Juniperi Virginianæ*. Link changed the name to *Gym. macropus*, and in his later memoir, Schweinitz refers it to the genus *Podisoma*, retaining, however, the specific name given to it by Link.

" The species," says Schweinitz, " is rather rare in those parts of Upper Carolina with which I am best acquainted, but very common in Pennsylvania infesting, especially, clipped trees of *Juniperus Virginiana* and commonly known by the name of the " *Cedar Apple*." under which it is sold in the markets as a powerful but fabulous anthelmintic. Link expresses his sorrow that I have not investigated the anatomy of the lower part of the sporidochium. I willingly give here what information I have on the subject. First then the base is by no means to be regarded as a sporidochium, if one is to regard as sporidochium what is usually so termed in *Podisoma Juniperi*. That gelatinous body composed of the matted peduncles of the sporidia exactly agrees with the tremelloid ligules of our *Podisoma macropus*. The basilar globe in question is of quite a different of a single spring night the whole tree as it were with the richest crop of ripe oranges. If wet weather continues for many days, it remains in this state till the ligules melt away. Under the influence of the sun, however, they soon dry up, and never revive. The apples last for a year. Old specimens are internally not unlike excrescences of trees. The apple is never found without at least rudimentary ligules, nor the ligules without the apple. In general when the Junipers are cut into a pyramidal or other form they are covered with an incredible quantity of these fungi, but according to observations which I have carefully made for ten years it does not destroy them, nor does it even seem to injure them. Many people therefore, and some, not of the lowest class, believe firmly that it is either the real inflorescence or fruit of the Juniper. I am convinced from close observation that it has nothing to do with insects. The apple does not however, appear very clearly of a fungous nature. It appears to me to be a most anomalous substance, respecting which it is better to assert nothing, but to examine more accurately.

The anatomy of the base of this fungus in its young state before it protrudes the tremelloid ligule, exhibits the following appearances. The substance is then altogether like that of a ripe apple; if cut with a knife it is of a whitish green like that of an unripe apple; grumoso-cellular radiating from the base. The green tint soon changes into tawny orange, and then a few whitish fibres are observed radiating and branching from the base. After the protrusion of the ligules which takes place in rainy weather the apple does not increase, but if the spring is not rainy, it increases daily. The epidermis of the younger excrescences before the evolution of the sporidochia has a filamentoso-furfuraceous texture, and is as thick as the peal of an apple. The ligules in their most perfect state are loaded with sporidia, just as in *P. juniperi*; but they are generally longer and not conical, but often somewhat flexuous and attenuated towards the apex.

It may be observed that our British species grow from a peculiar disc though not developed so highly as the Cedar Apple, and that a similar disc occurs in a new species of *Cyttaria*, discovered at Cape Horn, by Dr. Joseph Hooker to which I purpose to give the name of *Cyttaria Hookeri*. M. J. B.

Contributions to the Botany of SOUTH AMERICA. *By* JOHN MIERS, ESQ., F.R.S. F.L.S.

(*With a Plate,* TAB. XIII, XIV.)

It is the intention of the author to continue, from time to time, a series of these Contributions to the Botany of South

America, the results of the observations made by him during several years' residence both on the western and eastern shores of that vast continent. Having availed himself of the opportunity of examining many plants in the living state, and preserved drawings and details of a great number, he proposes to select from these such as may be still undescribed or yet imperfectly understood. Whenever the subject admits, he will collect all the materials he can command towards monographs of each genus, not in any regular order, but as the subjects present themselves. In his endeavours to carry out this plan, he has received much kind assistance from Sir William Hooker, and he has great pleasure in acknowledging his obligation to that distinguished Botanist for the liberality with which he has afforded the use of his valuable library of reference and the freest access to his extensive herbarium, which is particularly rich in the botanical productions of South America. From this fertile source, and the different herbaria in the British Museum, as well from the materials in his own collection, he has prepared the following contributions, which he proposes to follow up by illustrations drawn by himself, exhibiting the details, which according to his views, tend to exemplify the characters of each genus referred to.* The vast accumulation of plants during the last few years,

SALPICHROA.

Under this name it is proposed to class several plants that have been hitherto arranged in *Atropa*, the limits of which genus remained for a long while undefined, many species having been referred to it, and again removed by different botanists. Its character, as given by Professor Spenner (Gen. Pl. Germ. p. 21, tab. 18) upon the typical species A. *Belladonna* is deficient in so far as regards all the South American species. That offered by Prof. Endlicher (Gen. Pl. n. 3857) has evidently been framed with the intention of embracing the whole of these, amounting to about ten, which, however, include two other very distinct forms; of these, four will be classed in *Salpichroa*, and the remaining six under the name of *Hebecladus*.* The plants before mentioned possess a calyx

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* They are all remarkable for their conspicuous flowers presenting an intermediate tooth in the plicature between the lobes of the corolla. The generic name of *Hebecladus* is derived from ηβη, *pubes*, κλαδος, *ramus tener*, in allusion to their habit, which much resembles that of *Salpichroa*, but is more suffruticose. The following elements for a generic character have been taken from the species I have examined in the dried state.

HEBECLADUS. Gen. nov. Calyx brevis, profunde 5 partitus, laciniis ovatis submembranaceis, 1-nerviis, venosis, persistens. Corolla infundibuliformis, tubo amplo calyce 2-6 plo longiori, fauce ampliato, limbo patenti-sinuato, 5 lobo, lobis acutis, sæpissime dentibus interjectis, æstivatione basi valde plicatis. Stamina 5, imo corollæ inserta, filamentis filiformibus, glabris, basi dilatatis, antheris exsertis, cordato-oblongis, adnatis, 2 lobis, longitudinaliter dehiscentibus, polline albido. Ovarium subrotundum, glabrum, (disco nullo?), 2 loculare, placentis dissepimento adnatis, pluri-ovulatis. Stylus simplex, exsertus. Stigma clavato-capitatum, sub 2-lobum. Bacca globosa, parva, calyce membranace~~i~~ o suffulta. Semina plurima in pulpam nidulantia, compressa, reniformia, testa reticulata. Embryo intra albumen carnosum hamato-arcuatus, cotyledonibus semiteretibus; radiculi tereti, infernè paulo crassiora, duplo longiori, hilum petente. Suffrutices *Americæ intertropicæ*, ramulis *subdichotomis, flexuosis, teneris;* foliis *plerumque geminis, altero vix minori, ovatis, ellipticis, vel cordatis, integris, petiolatis.* Inflorescentia *pedunculo solitario laterali, cernuo, floribus* 1-2 *vel plurimis, umbellatis, rubris, flavis, vel rubro viridescentibus.* Bacca *alba, pisi magnitudine.*

1. Hebecladus *viridiflorus.* Atropa viridiflora. *H. B. K.* 3, 11, *tab.* 196;

that scarcely enlarges, and that is usually cleft, almost to the base, into five linear erect segments, not a campanulate,

Caule fruticoso volubili, foliis geminis, elliptico-ovatis, subacuminatis, integerrimis, basi in petiolum decurrentibus, utrinque (præsertim subtus) hirtellis; pedunculo bifloro; floribus nutantibus; corolla calyce 3-4 plo longiori, basi externe tuberculis 5 instructa.—Nova Granada.

Specimens of this plant exist in the herbarium of Sir William Hooker, collected by Professor Jameson on the Western side of the Volcano of Pichincha, at an altitude of 13,000 feet; by Colonel Hall, in the Valley of Lloa, who describes it as a large shrub; and again by Professor Jameson in Columbia (n. 195); and by Goudot, at Bogota in New Granada. The leaves are 3 inches long, and 1¼ inch broad, on a petiole ½ inch long; peduncle 1-2 flowered, the calyx is somewhat pentagonous, and deeply cleft into 5 thin greenish triangular segments, with ciliate margins; the corolla is slightly pubescent; the filaments are wholly free to the base, where they have a short triangular dilatation, which is ciliate, above this they are slender and quite glabrous; the anthers are cordate at base, apiculate at summit.

2. Hebecladus *umbellatus*. Atropa umbellata. *R. & P.* 2, 44, *tab.* 181, *a.*; caule frutescente, flexuoso fragili; foliis subgeminis, cordato-ovatis, subangulatis, pubescentibus; pedunculo axillari, laterali, umbellato, multifloro, nutante; corolla mellifera, purpurea, limbo reflexo, ciliato, luteo, plicaturis vix dentatis; staminibus inclusis; stylo exserto; bacca albida, calyce patenti suffulta.—Peruviæ collibus circa Limam et Chancay. *v. s. in Herb. Hooker*. Amancaës prope Limam (*Mathews*, n. 722).

A small shrubby plant; the leaves are not only somewhat angularly sinuate, but have eroso-denticulate margins.

5-partite calyx, with stellately patent lobes, increasing considerably in size with the fruit; it has a narrow tubular fleshy corolla, often contracted in the mouth, not one that is cam-

6. Hebecladus *intermedius*, sp. nov.; caule glabro; foliis ovatis, angulato sinuatis, margine erosis, utrinque parce pilosis, venis pulverulentis; umbella triflora; corolla tubulosa, floccoso-hirtella, lobis 5 sublinearibus, dentibus interjectis; antheris sagittatis, longe exsertis, filamentis gracilibus, glabris.—*v. s. in Herb. Hooker*. Purruchuco Peruviæ. (*Mathews*, n. 524. sub nomine *Atropæ asperæ, R. & P.*)

This plant, in the shape of its leaves, approaches A. *aspera*, R. & P., but they are by no means asperous; the flowers differ much from the figure of that species, resembling more those of A. *biflora*; the leaves are 3¼ inches long, and 1¼ inches broad, on a petiole ¾ inch long; the stem of the umbel is ½ inch long, the pedicels being 10 lines, the calyx is 4 lines, the tube of the corolla 1 inch, the border 4 lines in length.

7. Hebecladus *lanceolatus*, sp. nov.; caule flexuoso, glabro, subangulari; foliis geminatis, altero minori, lanceolato-ellipticis, basi cuneatis, apice acuminatis, petioloque utrinque parce molliter hirtellis; umbella in axillis laterali, 4 flora; calycis margine floccoso; corollæ tubo rubello, glabro, ore flavo, 5 lobo, lobis acutissimis, puberulis, dentibus tot conspicuis, acutis, interjectis; staminibus inclusis; stylo exserto, clavato. —Columbia, *v. s.* in Herb. Hooker (*Hartweg*, n. 1301).

The leaves of this species are 3¼ inches long, and 1½ inch broad, on a petiole ½ inch long; the stem of the umbel is 1¼ inch, and the pedicels 9 lines in length. The flowers are of similar size to those of H. *viridiflora*.

8. Hebecladus *Turneri*, sp. nov. Caule flexuoso, tereti; foliis geminis, æqualibus, ovatis, acutis, basi late rotundatis, in petiolum decurrentibus, utrinque pilis mollissimis sparsis; umbella cernua, 6-8 flora; calycis laciniis lanceolatis, pubescentibus; corolla parva, glabra, aurantiaca, lobis acuminatis, margine floccosis; staminibus brevibus, inclusis; stylo exserto; bacca rubra calyce patenti suffulta.—Patria ignota.

This specimen exists in Sir W. Hooker's Herbarium, evidently dried from a cultivated species by Dawson Turner, Esq. without any note of its origin or the place of its growth. The leaves are 3½ inches long, and 2½ inches broad; the stem of the umbel is 4 lines, the pedicels 6 lines, the corolla 6 lines long, the latter being of an orange colour, rather broad in proportion.

Species dubia.

9. Hebecladus *hirtellus*. Atropa hirtella. *Spr.* 1, 699. Ramis asperis; foliis ovato-oblongis, acutis, scabris; pedunculis elongatis, 1 floris, filiformibus.—Brazil.

panular, veined, thin in substance, and widened in the throat; its filaments are short, slender, and inserted in the middle, not in the bottom of the corolla; the anthers are linear, erect, nearly exserted, not oval and reflexed in the middle of the tube; its ovarium is deeply imbedded in a large coloured fleshy disc, not wholly free, or at least supported on a small 5-lobed ring. The stigma is clavate, almost cup-shaped, not deeply sulcated, 2-lobed, and reflexed. The berry is of a bright scarlet colour, not greenish or black. The testa of the seed is rugous, and covered with rigid hairs, not smooth and reticulated: characters offering many well marked points of distinction from *Atropa*. There is another remarkable difference between *Atropa* and *Salpichroa*; in the one, the corolla is thin, becoming membranaceous and unchanged in drying, while that of the other is thick and fleshy, becoming black as it dries, a character it possesses in common with most of the *Jaborosa* group, such as *Jaborosa*, *Himeranthus*, *Dorystigma*, and by *Juanulloa*, &c. The name is derived from σαλπιγξ *buccinum*, χροα colour, in allusion to its pretty, trumpet-shaped flowers, and the following are its generic characters.

SALPICHROA. *Calyx* persistens, sæpissimè profunde 5 partitus, lobis linearibus acutis, fructifer haud mutatus, rarius 5-fidus. *Corolla* hypogyna, subcarnosa, infundibuliformis,

(præsertim versus marginem) pilis simplicibus rigidis dense vestita, hilo marginali. Embryo intra albumen carnosum arcuatus; cotyledonibus semiteretibus; radiculâ tereti hilum spectante.—Herbæ *Americæ meridionalis puberulæ, diffusæ, ramosæ, subscandentes;* caule *angulato, flexuoso, suffruticoso;* ramis *foliis oppositis.* Folia *solitaria, vel gemina, rarius terna, integra, in petiolum longum decurrentia.* Flores *solitarii, albidi, vel lutei, siccitate nigricantes, pedunculati, demum cernui.* Bacca *rubra.*

§ I. EUSALPICHROA. *Corolla longe tubulosa, intus imo glabra.*

1. **Salpichroa** *glandulosa.* Atropa glandulosa. *Hook. Bot. Misc.* 2.230. *Hook. Icon.* 106; caule fruticoso, suberecto; foliis geminis, longe petiolatis, cordato-ovatis, glanduloso-pubescentibus, sæpe incano-tomentosis; calyce pubescente, profunde 5 partito, laciniis linearibus; corolla flava, longe tubulosa, staminibus styloque inclusis.—Pasco Peruviæ.
2. **Salpichroa** *dependens.* Atropa dependens. *Hook. Icon.* 107; caule suffruticoso, pendente; foliis geminis, cordato-ovatis, breviter petiolatis, fere glabris, subtus pallidis; calyce tubuloso, tenui, pubescente, 5 fido, demum fructifero subampliato hinc fisso; corolla longe tubulosa, stylo staminibusque exsertis.—Peruvia (*Mathews,* n. 829).
3. **Salpichroa** *hirsuta.* Atropa hirsuta, *Meyen* (*Riese um die Erde,* 1, 466). *Nees ab Esenb.* (*Nov. Act.* 19, *Suppl.* 1, 389); caule suffruticoso, ramosissimo, diffuso; foliis geminis, subcordato-ovatis, longe petiolatis, calycibusque profunde 5 partitis, hirsutis; corolla tubulosa, antheris cum styli apice exsertis.—Peruvia, circa Pisacomam, altitudine 15,000 ped.

This appears to be the same plant, of which many specimens exist in the herbarium of Sir William Hooker from various localities, viz:

Pichincha (*Jameson,* n. 32), Pichincha (*id.* n. 301), Columbia (*Hartweg,* n. 1311). In these the stem is 4-angular, flexuose; the leaves are solitary, geminate, and ternate, from

½ to 1 inch long, and 4 to 9 lines wide; the petiole is nearly as long as the leaf, slender, and caniculate; the internodes are about the length of the leaves; the flowers are solitary and lateral; the corolla about ten lines long, tubular, of a greenish yellow colour, glabrous, having oblong obtuse lobes, with floccose margins; the oval berry is terminated by the persistent glabrous style. Andes of Peru (*M'Lean*), where the leaves are more ovate, nearly glabrous above, pubescent beneath, the margins being somewhat crenate. Andes of Quito (*Jameson*, n. 125), of more stunted growth, a flexuose stem, presenting many short knotty leafless internodes; leaves ternate, barely 3 to 4 lines long, 2 to 3 lines broad, petiole 3 to 5 lines long. Bogota (*Goudot*), very near the last; the branches are somewhat more divaricate, and of a darker reddish colour.

4. Salpichroa *ramosissima*, sp. nov.; caule fruticuloso, 4gono; axillis annotinis nodosis; ramulis pubescentibus; foliis utrinque glabriusculis, geminis ternisque, æqualibus, submembranaceis, elliptico-oblongis, basi rotundatis, in petiolum gracilem decurrentibus, apice subacuminatis, margine ciliatis; floribus solitariis lateralibus; corolla tubulosa, calyce 3plo longiori, fauce contracta, lobis acutiusculis, reflexis, margine velutinis.—Purruchuco, Peruviæ. v. s. in [redacted]

datis in petiolum attenuatis, fere glabris, margine petioloque ciliatis, interdum valde pubescentibus,—Bonaria. *Busbeckia*, sp. Mart. MSS.

I met with this species in 1825, when its details were recorded by drawings from the living plant; it was also collected about the same time by Dr. Gillies, from whose specimens Sir William Hooker gave the excellent figure and description above quoted. I had long ago separated this from *Atropa* as a distinct genus under the name of *Perizoma*, and had prepared a drawing to exemplify it; but upon examining with more attention the species of the foregoing section that exist in Sir William Hooker's herbarium, I was led to the conclusion that it is better to place it as a distinct section of *Salpichroa*, on account of the close resemblance of the most essential characters of the flower and the seeds; the presence of the hairy perigynous ring and the different size and shape of the tube of the corolla not offering more than a sectional difference.

This is a weak plant trailing among bushes, or on the ground. The stem is slender, sub-4-angular, somewhat flexuose. The leaves are sometimes almost glabrous, often slightly pubescent on both sides, with very short articulate hairs, the margin and petiole being ciliated. The flowers are usually solitary (or geminate when the axils present ternate leaves); they are cernuous upon slender pubescent lateral peduncles. The calyx is deeply cleft into 5 long sharply-pointed, almost linear erect segments; it is slightly pubescent and persistent, it does not increase much in size nor become patent as the fruit ripens. The corolla is short and tubular, broad in proportion, quite white and smooth, and sensibly contracted both in the middle where the filaments are inserted, as well as in the mouth; the segments of the border are narrow, acuminated and reflected; the æstivation is slightly induplicate, the inflected edges adhering by their woolly margins; near the base of the tube is seen a somewhat fleshy ring, which is covered with long, woolly, white, articulated hairs. The stamens are equal, short, slender, and glabrous;

the anthers, converging around the style above the mouth of the tube, are narrow, linear, 2 locular, with parallel adnate cells, which burst longitudinally somewhat laterally; the pollen is yellow and farinaceous, and when seen in the microscope, both in the dried and humid state, is globular with 3 salient obtuse equidistant points. The ovarium is pyramidal, its base being deeply enveloped by a conspicuous fleshy orange-coloured disc; the style is conical at base, above which it has a broad band of long white hairs, and is quite smooth towards the summit, which rises a little above the anthers; the stigma is rather large, clavate, somewhat hollow, cup-shaped, and fleshy. The berry is of an oblong form, of a bright scarlet colour, about $\frac{1}{2}$ an inch long, and $\frac{3}{8}$ wide, apiculate at the summit with the persistent base of the style; it contains from 16 to 20 rather large dark brown seeds, enveloped in pulp; these are of a roundish square form, greatly flattened, with a small hilum on the marginal edge; the testa is hard, brittle, and rugous, both its surfaces, and especially the margin, being densely set with long rigid simple hairs; the albumen is fleshy ,rather compact, and encloses a nearly annular, filiform, embryo; the radicle is about one-third the length of the embryo, and points towards the hilum, the cotyledons being semiterete and arcuate.*

of an inch in length, the stem being 4-angular and pubescent.

var. γ. *pubescens.*—caule 4-gono; foliis fere ovalibus, rotundatis, utrinque valde pubescentibus, petiolo gracili.—Pampas, San Luis usque Rio Quinto.—This presents a very different appearance to the last variety; the leaves being about the same size, but the petiole is much longer and more slender.

6. Salpichroa *ciliata.* Lycium ciliatum, *Schl. Linn.* 7, 70:—suffruticosa, subscandens, ramis elongatis, flexuosis, ramulis interdum subspinescentibus; foliis sparsis, inæquilateris, rotundato-ovatis, interdum subcordatis, in petiolum attenuatis, apice brevissime acuminatis, utrinque glabris, margine denticulato-ciliatis; floribus axillaribus, solitariis, brevissime pedunculatis, cernuis, calycis laciniis linearibus, acutis; corolla puberula, infundibuliformi, genitalibus exsertis.—Rio Negro, Banda Oriental (Sellow).

From Professor Schlechtendahl's description, it is evident that this plant has a close affinity to the foregoing. The leaves are 1½ inch long, 16 to 18 lines broad; the peduncle is 1¼ to 2 lines long, erect, and curving downward; the calyx is deeply cleft into 5 linear segments, is covered with short glandular pubescence, and the margins are ciliated with glandular hairs. The corolla, somewhat longer than the calyx, is downy externally with glandular hairs, (articulate?), funnel-shaped, the segments of the border are triangular, rather obtuse, reflexed, with glandular ciliate margins; the stamens and style are far exserted, the filaments being inserted above the base of the corolla, where the tube is contracted, and closed internally by a ring of dense villous hairs. The berry is red, globose, and shorter than the persistent calyx, which increases in size to the length of 5 lines. The seeds are numerous, whitish, compressed, subreniform, but were not ripe when seen.

DUNALIA.

Among the plants sent from Peru by Mathews is one marked *Lycium obovatum,* but it is clearly not the one figured under that name in the Flora Peruviana.* In its

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* I have searched in vain for this plant in the herbarium of Ruiz and Pavon in the British Museum, nor can I find it elsewhere. In the herbarium of Sir Wm. Hooker there are, however, three plants from central America that bear much resemblance to it. It cannot be a true *Lycium* on account of the æstivation of its corolla which is valvato-plicative (not imbricate) and its lobes are acute with pubescent margins (not rounded and smooth); it appears to me that with some others I shall point out, these will form a distinct group; they possess a habit widely different from *Lycium*, although they are all spiny shrubs, generally with 1 or 2 violet or crimson flowers growing out of the fascicles of rather small fleshy leaves that cluster upon the spines; the corolla is usually broader and more tubular than in *Aenistus* or *Lycium*, with stamens often unequal and included; the calyx has generally acute lobes, and is not pentagonous with obtuse lobes as in *Aenistus*. They offer much resemblance in external appearance to the species of *Dunalia*, above described, but they want the intermediate tooth in the corolla and the appendiculate stamens of that genus. I propose to call them by the name of *Lycioplesium* from *Lycium*, and πλησιον, *approximatus*. It may be said that they should, like the *Lyciobatos* of Endlicher, form a distinct section of *Lycium*, but on account of the æstivation of the corolla, the generic character, so altered to admit of them, would necessarily include *Aenistus*, *Salpichroa*, *Chænesthes*, and *Iochroma*; genera decidedly inadmissable. The following is therefore offered as the generic character.

Lycioplesium, gen. nov. *Calyx* ovato-campanulatus, 5 dentatus, persistens. *Corolla* tubulosa, limbo 5-partito, æstivatione lobis acutis, valvato-plicatis, margine tomentosis. *Stamina* 5, corollæ longitudine, spiny habit it greatly resembles a *Lycium* or *Grabowskya*, but, on examining the flowers I, found it to possess all the

A shrub 12 feet high, very smooth, leaves including the petiole 1½ inch, 7 lines broad; peduncles 7 lines long; calyx urceolately tubular, 2 lines long, with 5 short obtuse lobes, having a small mucro at the apex; corolla tubular, purplish violet, 9 lines long, lobes of border short, 3-angular, erect, with floccose margins; filaments glabrous, arising above the base of the tube where it is pubescent; anthers included within the mouth; the style is exserted; the berry is globose, orange coloured.

2. Lycioplesium *nitidum*, (n. sp.) :—fruticosum, spinosum; foliis alternis, ovato-oblongis, glaberrimis, crassiusculis, supra lucidis, subtus pallide glaucis, rarius in venis tomentosis, margine revolutis, apice obtusis et minute retusis, basi cuneatis, in petiolum brevem attenuatis; floribus binis, pedunculis apice incrassatis, corolla rubro-violacea, staminibus exsertis.—Columbia, Pulzhum, in valleculis latere occidentali. (*Jameson*) *v. s. in Herb. Hooker*).

The young shoots (about ½ inch long) from which the leaves and flowers spring, finally become converted into spines; the peduncle is 7 lines long, and thickened at its apex; the calyx is campanular, 2 lines long, about the same breadth, and has 5 short rounded teeth with a small mucronate acumen; the corolla is smooth, tubular, 10 lines long, with 5 small erect lobes with a mucronulate apex and floccose margins; the anthers are oblong, 2-lobed, cordate at base, yellowish green, affixed at base, the filaments being inserted above the base of the tube of the corolla, where it is densely pubescent.

3. Lycioplesium *ovatum*, (n. sp.):—fruticosum, ramis sub-flexuosis, spinosis, ferrugineo-tomentosis; foliis glaberrimis, crassiusculis, ovalibus, utrinque rotundatis, margine revolutis, supra lucidis, subtus pallidioribus, breviter petiolatis; floribus solitariis, extra-axillaribus; corolla glabra, rubro-flavida, tubo latiori, staminibus inclusis.—Nova Granada, (*Goudot*.) *v. s. in Herb. Hooker*.

This is a shrub 10 or 12 feet high, with leaves 11 lin. long, 7 lin. broad, petiole 2 lin.; corolla smooth both without and within, except at the place of the insertion of the filaments somewhat above its base, where it is tomentous; the lobes of the border are oblong, obtuse, mucronulate at the apex, and tomentous on the inflected margins; filaments glabrous, anthers 2-lobed, oblong, yellowish green, in the mouth of the tube; berry black.

4. Lycioplesium *horridum*. Lycium horridum, *HBK*. 3.52. Lycium parvifolium, *Wild, R. and Sch.* 14.698;—suffruticosum, spinosissimum; foliis fasciculatis, obovatis, obtusis, crassiusculis, nitidis; floribus solitariis, pendulis; corolla violacea, staminibus subinclusis.—Andibus Peruviæ circa Caxamarcam.

essential characters of *Dunalia*. The genus *Dunalia*, founded by Prof. Kunth on a shrubby plant with much the habit of a *Witheringia*, brought from the Cordillera of New Granada by Humboldt, was placed by that learned botanist among *Cestrineæ*, on account of the resemblance of its flowers to those of *Cestrum*, although he confesses he knew nothing of the form of the embryo of its seed. Until this fact be ascertained it remains doubtful whether it may not with equal reason be classed in *Solaneæ*, near *Salpichroa* or *Chænesthes*, which view is much favoured by its numerous ovules seen upon the thickened placenta on the dissepiment; but on the other hand it must not be forgotten that some analogy exists between the appendiculate processes of the filaments in this genus, and the singular projection often seen upon the fila-

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This is said to be a shrub 6 feet high, with many spreading, thick, leafless branches; branchlets an inch long, furnished with leaves at base, spinose at the apex; leaves fasciculate (4-7), petiolate, 4-6 lin. long (including the petiole 1 lin.) 2-2½ lin. broad; flowers subaxillary, peduncles 3-4 lin. long, filiform, and smooth; calyx semiglobose, obsoletely 5-toothed, nearly entire, smooth, with 5 small acute teeth, about 1 line long; corolla smooth, tubular, somewhat curved, 7 lines long, border with 5 equal, acute, spreading lobes with ciliate pubescent margins; stamens inserted at base of tube, and equal in length to the corolla, filaments smooth, anthers erect, oblong; ovarium conical, smooth; style filiform, smooth, rather longer ment of some species of *Cestrum*, which appears as if two lateral lobes were agglutinated into one salient tooth.

The following is proposed for its generic character:

DUNALIA Kunth. (char. emend.)—*Calyx* urceolatus subpentagonus, 5-dentatus. *Corolla* hypogyna longe tubulosa 10-nervia, limbo 5-fido, lobis æstivatione marginibus floccosis vix induplicatis basi plicatis, dente mucronato erecto interjecto. *Stamina* 5 corollæ tubo inserta, inclusa vel exserta, filamentis basi dilatatis et pubescentibus, linea centrali tubo adnatis, marginibus membranaceis liberis, superne glabris, omnino liberis, 3-partitis, laciniis lateralibus linearibus acutis erectis, intermedio gracili antherifero; antheris oblongis, 2-lobis, basifixis, longitudinaliter dehiscentibus.—*Ovarium* ovatum, 2-loculare, placenti scrassis dissepimento adnatis, multi-ovulatis. *Stylus* simplex exsertus. *Stigma* emarginato-capitatum. *Bacca* globosa, calyce suffulta, 2-locularis. *Semina* plurima, reniformia compressa. *Embryo* ignotus.

Frutices *Andicoli Americæ meridionalis intertropicæ;* foliis *alternis petiolatis, geminis vel fasciculatis, glabris vel pubescentibus;* floribus *sub umbellato-fasciculatis vel solitariis, extra-axillaribus:* corollis *albis vel coccineis.*

1. Dunalia *solanacea*, HBK. 3.55. *tab.* 194. Dierbachia solanacea *Spreng. Syst.* 1.676.—inermis: ramulis tomentosis; foliis alternis, ovato-oblongis, acuminatis, basi inæqualiter rotundatis, supra glabris, subtus incanis, stellato tomentosis; floribus umbellato-fasciculatis; corollis stellato-tomentosis.—Nova Granada.

The leaves are said to be about 10 inches long and 4 inches broad, on a petiole an inch in length; the calyx does not measure a line; the corolla is white, nearly an inch long with a narrow slender tube, the lobes of the border being ovate, and 1-nerved; the stamens are very short, and placed in the middle of the tube of the corolla, the lateral appendages equalling in length the intermediate antheriferous filament; the style is much longer than the corolla; the berry is globose, glabrous, about the size of a pea.

2. Dunalia *lycioides* (sp. nov.)—fruticosa, glaberrima; ramulis horrido-spinosis; foliis fasciculatis (1-2-3), lanceolato-spathulatis, obtusis, in petiolum decurrentibus; floribus (1-2) nutantibus, staminibus exsertis. — Peruviæ Prov. Canta, Tarma et Jauja. (*Mathews* n. 850) in herb. meo; etiam in herb. Hook. cum aliis Columbia (*Lobb.* n. 255) et Bolivia (*Pentland*).

This is described to be a shrub 6 or 8 feet high. The branches are flexuose, quite smooth with internodes scarcely an inch distant, and a single stout, sharp pointed, divaricate spine in each axil, 2 inches in length, the older ones being bare and sometimes again spiny; the younger ones bearing leaves and flowers. The leaves are smooth, fleshy, rounded at the apex, and tapering at base into the petiole, they are 9 lines in length and 2½ lines wide; the peduncles are 4 lin. long; the calyx at first slightly pubescent, is urceolate, with 5 projecting ribs which terminate in as many short teeth, with a mucronulate woolly apex. The corolla is broader and about the length of the last species, being 10 lines long, smooth, of a crimson colour, having a border of 5 short, rather erect lobes, with floccose margins, and a narrow intermediate plicature with tomentose edges and a small erect tooth in the centre. The crimson filaments are adnate by a central line

3.41 *tab.* 325. Another species, also confounded with it, had been long previously known and figured by Plumier, under the name of *Belladonna frutescens* (*tab.* 46, *f.* 1). The authors of the Flora Peruviana have given a representation of a fourth species, under the name of *Lycium aggregatum*, (2.45. *tab.* 182. *f.* *a.*); but as the characteristic features of the genus are not delineated in the figures above quoted, nor any exact details have, to my knowledge, yet been published, I offer the following from my own observations.

ACNISTUS *Schott.* (char. reform).—*Calyx* campanulatus, sub-5-gonus, obsolete 5-dentatus. *Corolla* hypogyna, infundibuliformis, fauce sensim ampliato, limbo 5-partito, patento, reflexo, æstivatione lobis margine floccosis, valvato-induplicativis. *Stamina* 5, corollæ tubo supra basin inserta, *filamenta* simplicia; *antheræ* 2-lobæ, longitudinaliter dehiscentes, sæpe exsertæ. *Ovarium* e disco calycino ortum, 2-loculare, placentis crassis, dissepimento adnatis, pluri-ovulatis. *Stylus* simplex. *Stigma* capitatum, sub-bilabiatum. *Bacca* calyce suffulta, 2-locularis. *Semina* pauca, reniformia, compressa; testa rugosa, dura. *Embryo* intra albumen carnosum, hamato-arcuatus, cotyledonibus semiteretibus, radicula tereti, inferne crassiori fere duplo longiori, hilum spectante.

Frutices *Americæ tropicæ*, foliis *alternis*, *integris*, *junioribus aggregatis*; floribus *pedunculatis*, *in axillis sæpe annotinis*, *fasciculatis*, *rarius in racemis terminalibus*; pedunculis *apice incrassatis*.

There is very little tenable ground for maintaining this genus, as hitherto constituted, distinct from *Lycium*, there being hardly any single character that is not equally common to both of them, excepting the hairy tuft at the base of the filaments in the one, (and that is a very inconstant feature), and the numerous fascicles of flowers in the cicatrices of the fallen leaves in the other. An important distinction will, however, be found to exist in the æstivation of the corolla. We have the respectable authority of Schlechtendahl and Schott, which has been acceded to by all succeeding botanists, that *Aenistus* possesses an imbricate æstivation. I cannot affirm this statement, for in the Brazilian species upon which Schott founded this genus, the lobes of the corolla unquestionably adhere by their tomentous margins, which are mutually and slightly turned in, a mode of æstivation observed in many arborescent species of *Solanum*, and very different from that of true *Lycium*, where the lobes of the corolla offer an imbricate or quincuncial æstivation. It therefore seems advisable to unite with *Aenistus*, several species hitherto combined with *Lycium*, forming part of the section called *Anisodontia* by G. Don, and *Lyciothamnos* by Endlicher; these mostly consist of spineless trees or shrubs, with large leaves, having flowers in umbellate fascicles, and I propose to confine within the limit of *Lycium* proper, those shrubs, mostly with small fasciculate leaves, whose branchlets terminate in spines, or have a tendency to do so, that have only 1 or 2 flowers in each axil, and with elements corresponding to the old generic character exhibited by Gärtner (*de fructu* 2.242), with the addition of the before mentioned æstivation.*

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* The remaining species of *Lycium* in the section above alluded to, appear to me again distinct, approaching very closely to *Dunalia*, but as their filaments want the lateral appendages peculiar to that genus, I pro-

It should be remarked that the flowers in most (and I believe in all) species of *Acnistus* possess a very sweet smell.

1. Acnistus *cauliflorus*, Schott;—foliis obovato-oblongis, utrin-

cosis, æstivatione valvato-induplicativis, basi plicatis, dentibus brevibus interjectis. *Stamina* 5, subinclusa, filamentis basi adnatis, mox liberis, gracilibus, erectis, vix exsertis; antheris oblongis, basifixis. *Ovarium* ovatum, 2-loculare. *Stylus* gracilis, apice incrassatus, exsertus. *Stigma* clavato-bilobum. *Bacca* obovata, calyce hinc fisso inclusa. *Semina* numerosa, in pulpo nidulantia, rugosa, reniformia, cetera ignota.

Frutices *Andicoli Americæ intertropicæ*. Folia *alterna, petiolata*. Flores *speciosi, coccinei, vel aurantiaci*. Bacca *rubra*.

1. Chænesthes *fuchsioides*. Lycium fuchsioides. *H. B. K.* 3, 52. *Pl. Æquin. tab.* 42. *Bot. Mag. tab.* 4149. Fruticosa; foliis obovato-oblongis, obtusiusculis, glabris; umbellis extra-axillaribus, terminalibusque, sessilibus, multifloribus; pedicellis glabris, cernuis; calyce 2-lobo, sub 5-dentato, lobo altero 3-dentato, vel integro; corolla coccinea, glabra, filamentis basi villosis, dilatatis, inclusis. Quito (in vallem Lloæ), *Hall*, n. 7. Columbia, *Jameson*. *v. s. in Herb. Hooker.*

Bonpland describes this to be a shrub 10 or 12 feet high. The leaves are smaller than most of the other species, being only 2 in. long, and 9 lin. wide, broader towards the top, and narrowing gradually into a petiole of 6 lin. in length. The calyx is tubular, quite glabrous, about 5 lin. long, broadly 2-lobed, the one lobe having a single, sometimes two minute pubescent teeth, the other having three minute approximate teeth, which are downy; the flowers, according to Bonpland, are of a "beau rouge," while Colonel Hall states them to be "orange red;" they are about 1 inch long, tubular, glabrous, with a border of five somewhat erect lobes, with a small tooth in each intermediate plicature; the filaments are crimson, subulate, slightly hairy below, inserted near the base of the corolla; the berry is pyriform (not globular), and three times the length of that figured by Bonpland, 9 lines long, enclosed by the enlarged calyx, which is cleft to the base on one side; the seeds are very numerous, but too unripe to discover the form of the embryo. The plant found by Prof. Jameson in Columbia is hardly to be distinguished from that of Col. Hall, except that in the latter, the stamens are somewhat exserted, and the calyx is divided into five nearly equal segments, being scarcely bilabiate; but that difference alone can hardly make it a distinct species. Prof. Jameson says it is found abundantly in the neighbourhood of villages (azogues), where it is used for fences. The cultivated specimens described by Sir Wm. Hooker (*Bot. Mag. tab.* 4149), exhibit larger and broader leaves and larger flowers, but the calyx is exactly that as above described from Columbia.

2. Chænesthes *umbrosa*. Lycium umbrosum. *H. B. K.* 3, 54. Fruticosa;

que attenuatis, basi cuneatis, in petiolum longum subdecurrentibus, integris, utrinque pubescentibus, demum subglabris, subtus pallidis; floribus fasciculatis, confertis, longe

ramulis hirto-pubescentibus; foliis oblongis, acuminatis, glabriusculis, floralibus ovato-rhomboideis; floribus umbellato-fasciculatis, lateraliter extra-axillaribus; corollis coccineis, tubulosis, hirtellis; staminibus subinclusis; stigmate exserto, bilobo.—Nova Granada. Columbia (*Hartweg*, n. 1310). *v. s.* in Herb. Hooker.

The leaves are 3 in. long and 2½ in. broad, the petiole being 1¼ in. long; the pedicels are 1½ in. long, the calyx 5 lin. the corolla 1¼ in. long; the crimson filaments are adnate to the base for a length of 3 lines, where they are downy, thence they are free, tomentous, and dilated below, smooth and tapering gradually upwards; the style thickens considerably towards its summit.

3. Chænesthes *gesnerioides*. Lycium gesnerioides. *H. B. K.* 3, 53. Fruticosa; foliis ovatis, oblongisve, acutis, supra fere glabris, infra pulverulentis; floribus umbellato-congestis; calyce 5 dentato; corolla aurantiaca, pubescenti, filamentis pubescentibus.—Peruvia, Prov. Chachapoyas (*Mathews*). *v. s.* in Herb. Hooker.

In this species the leaves are about the size of C. *fuchsioides*, the flowers are in fascicles, with slender pedicels swelling at the summit, 1½ in. long and tomentous; the calyx is short, unequally 5-toothed, 2-lobed, the one having sometimes 3 teeth, often truncated; the corolla of an orange-red colour, is covered with soft, dense, yellowish down, and is 1¼ in. long; the anthers are half exserted; the style being somewhat longer, and the stigma capitate and bilobed.

pedunculatis; corollis pubescentibus, staminibus breviter exsertis.—Rio de Janeiro et in Insulis Antillanis.

This species, which is widely disseminated throughout tropical South America, is considered by Schlechtendahl and others as identical with the three following; but as it differs in many respects, I have kept it distinct. The leaves are more

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ginibus floccosis; antheris lineari-oblongis, subinclusis.—Paramo de Quindui, Nova Granada (Goudot), *v. s. in Herb. Hooker.*

The leaves are 5½ in. long and 1¾ in. broad, on a petiole 1 in. long, with many divergent parallel veins. The stalk of the umbel does not exceed 3 lin., the calyx 3 lin., on a pedicel of 9 lin. long; the corolla seems of a crimson colour, the tube slightly curved, about 1½ in. long and 4 lin. broad; the filaments are adnate to the base of the corolla for the length of 6 lin. where they are tomentous; they then become free, are pubescent below, slender and glabrous upwards, and of a crimson colour; the anthers are half exserted.

IOCHROMA, *Benth.*

With Sir Wm. Hooker's kind permission I add here a new species of Mr. Bentham's beautiful genus *Iochroma,* in addition to the three species enumerated in the *Bot. Reg.* 1845, *tab.* 20.

4. Iochroma *macrocalyx* (sp. nov.); Suffruticosa; foliis rhomboideo-ovatis, utrinque molliter pubescentibus, subtus pallidis; floribus umbellato-fasciculatis; calyce tubo magno, ventricoso, ore constricto, 5-dentato, 2-lobo, lobo altero 3-dentato; corolla magna, speciosa, cyanæa, hirtella, staminibus inclusis. (TAB. XIII, XIV).—Quito, in vallem Lloæ (*Hall*). *v. s. in herb. Hooker.*

This is a very handsome species, with large elliptic leaves, of a somewhat rhomboidal form, broader above the middle, and tapering gradually to the petiole, which is 1 inch long; they are 5½ in. long and 3 in. broad, minutely punctulate above, with a few scattered downy hairs on each side; the umbels are sessile in flower, pedunculated in fruit; the calyx is 1½ in. long, 5 lines in diameter in the mouth, and swelling in the middle to 9 lin.; the corolla is long, tubular, and somewhat curved, 2¼ to 2½ in. long, of a "dark purple colour," its border is much expanded, its 5 lobes having floccose and ciliato-erose margins, with a broad intervening plicature between each, which is a character common to the other species. Another feature seems to belong to all the species of this genus, the upper surface of the leaves is covered with very minute raised dots.

Tab. XIII, XIV, f. 1. Corolla; f. 2. the same laid open; f. 3. Fruit; all nat. size.

elliptic, with comparatively longer petioles, the stamens less exserted, the corolla more slender, with a proportionally longer tube, which is pubescent, the anthers are apiculated, the style far exserted, the peduncles glabrous, longer, and more slender. A specimen in Sir William Hooker's herbarium, from the Island of St. Vincent's is not distinguishable from the Brazilian specimens.*

2. Acnistus *arborescens*, Schlecht. Linn. 7, 67. Atropa arborescens, *Lin. Lam. Dict.* 1. 396. Cestrum cauliflorum, *Jacq. Hort. Schœn.* 3, 41, *tab.* 325.—Arbusculus, ramis pubescentibus, vix tomentosis; foliis oblongis, utrinque attenuatis, breviter petiolatis, integerrimis, supra cano-pubescentibus, demum glabris, infra albo-tomentosis: floribus umbellato-fasciculatis: corolla tubo brevi, lata; staminibus longe exsertis.—In Insulis Antillanis. (*v. s. in herb. Hook. sp. in hort. cult.*)

This species is sufficiently distinct from the others in the form of its flowers, which are well shown in Jacquin's figure, where the leaves are not represented longer than 3 or 4 inches, but in Sir W. Hooker's cultivated specimen they are 9 inches long, upon a petiole of 1 inch, they are 4¾ in. broad, quite smooth on both sides; the pedicels are slender, the corolla quite glabrous, very short, and broader in proportion than petiole 9 lin. in length; the corolla is white, with a much longer and narrower tube; the calyx is deeply cleft into 5 acute lobes.

4. **Acnistus** *aggregatus*. Lycium aggregatum. *R. & P.*, 2, 45, *tab.* 182, *a.* Cestrum campanulatum, *Lam. Dict.* 1, 688. Lycium arborescens, *Hook. Spreng. Syst.* 1, 701. *Hook. Bot. Misc.* 2, 232.—Frutex leviter tomentosus, canescens; foliis primum fasciculatis, demum sparsis, oblongis, utrinque acutis, undulatis, integerrimis, supra subglabris, subtus incano vel flavido-tomentosis: floribus umbellato-fasciculatis, corolla alba, tubo brevi, lobis macula viridi notatis, staminibus vix exsertis.—Peruvia. *v. s. in herb. Hook.*

The leaves are from 3 to 6 in. long, and 1¼ to 2½ in. broad, more elliptic: the calyx and corolla are both pubescent, the lobes of the former being short and obtuse.

5. **Acnistus** *Guayaquilensis*, G. Don. Lycium Guayaquilense, *H. B. K.* 3, 50:—foliis elliptico-oblongis, acutis, supra parce puberulis, subtus molliter cano-tomentosis; umbellis extra-axillaribus, sessilibus; calyce pentagono; corolla alba; staminibus exsertis.—Guayaquil.

In this species the leaves are described by Kunth to be from 6 to 7 in. long, and 2½ to 3 in. wide, on a petiole ½ in. long; the flowers are about the size of those of *Lycium Europeum*, and of a sweet smell, as in the preceding species.

6. Acnistus *floribundus*, G. Don. Lycium floribundum, *H. B. K.* 3, 51:—foliis oblongis, acutis, glabris, infra pubescentibus; umbellis extra-axillaribus, sessilibus, approximatis; floribus præcedenti majoribus; corolla alba, extus pubescenti; staminibus exsertis.—In Andibus Peruvianis, ad Caxamarcam.

The leaves of this species are from 2 to 3 in. long, on a petiole of 3 to 4 lin., the flowers somewhat smaller than those of the species last described, are more numerous in each fascicle, of a sweet smell, upon smooth pedicels, which are from 5 to 6 lin. long, and thickening towards the calyx.

7. Acnistus *spathulatus*, G. Don. Lycium spathulatum, *R. & P.* 2, 46, *tab.* 183, *a*:—glaber, ramis angulatis; foliis obovato-spathulatis, dispersis, vel fasciculatis, in petiolum longum

decurrentibus; umbellis subaxillaribus sessilibus; corollæ lobis acutis, pubescentibus.—Huanuco Peruviæ. *v. s. in Herb. Hooker*. (*Mathews, n.* 849).

This is described as a shrub, 8 to 10 feet high; the leaves, including the decurrent petiole, are 5 in. long and 1¼ in. broad, the pedicels are thicker above; the flowers are of a violet hue, and the filaments pubescent at base.

8. Acnistus *sideroxyloides*, G. Don. Atropa sideroxyloides, *Wild. in R. et Sch.* 4. 686:—foliis oblongo-ovatis, utrinque acutis, infra pubescentibus; umbellis lateralibus, sessilibus.—Peruvia ad ripas fluv. Magdalenæ.

9. Acnistus *ramiflorus*, (sp. nov.); ramulis pallidis, glabris, verruculosis; foliis oblongis, utrinque attenuatis; nodis annotinis floriferis, valde approximatis; floribus plurimis, umbellato-fasciculatis; pedicellis gracilibus; corolla glabra, lobis margine tomentosis; staminibus styloque 2-lobo exsertis.—In Insula San Vincenti. *v. s. in Herb. Hooker.*

This is a very distinct species, remarkable for its proximate floriferous internodes, which are not more than half an inch apart. The leaves are 8¼ in. long, and 3¼ in. broad, on a petiole 1¼ in. long; the flowers are numerous in each fascicle, the pedicels being 6 to 9 lin. long: the corolla is smooth.

10. Acnistus *Benthami*. Lycium macrophyllum, *Benth.*—Caule

in herb. Hooker (*Mathews*, 1836. Provincia Chachapoyas; 1840. Caxamarca, n. 3244).

The leaves are 3¾ in. long, and 1¾ in. broad, on a petiole of 9 lin.; the pedicels are 1½ in. long; the corolla has a tube 7 lin. and a border 4 lin. in length.

12. Acnistus *cestroides*. Lycium cestroides. *Schlecht. Linn.* 7, 70: ramulis pubescentibus, interdum spinescentibus; foliis late lanceolatis, utrinque acutis, glabris; floribus umbellato-fasciculatis; pedunculis apice incrassatis; corolla glabra, lobis brevibus, obtusis, margine tomentosis; staminibus inæqualibus, inclusis.—Banda Oriental, in San José de Uruguay. (*Sellow*).

This is said to be a bushy shrub, with flexuose branches, the younger ones downy, short (some of them almost spiny at the apex), bearing fascicles of young leaves, and almost umbellate clusters of flowers; the leaves have short petioles, measuring altogether 2 to 2½ in long, and 8 to 10 lin. broad, the petiole being semiterete and pulvinate at base, out of a short tubercle; when in flower the peduncles are 3 lines, in fruit 5 lines long; the calyx is 1⅓ lin. long, having short lobes with a subulate tooth at the apex; the corolla is 8 lin. long; the berry is globose, red, 3 lin. diameter; the seed with its embryo agrees with the character of that given in the typical species.

13. Acnistus *ellipticus*, Hook. fil. ined.—Fruticosus; foliis ellipticis, utrinque attenuatis et glabris, floribus paucis, fasciculatis, pedicellis longis; corolla extus cano-pubescenti, lobis brevissimis, staminibus inclusis, medio tubi insertis. —Insula Galapagos (*Darwin*).

This is a very distinct species, with smooth elliptic leaves, 3½ in. long, 1½ in. broad, with a channelled petiole ½ in. long; the flowers 3 or 4 in a fascicle, grow out of the cicatrices of the fallen leaves; the peduncle being 1¼ in. long, considerably thickened towards the summit; the calyx is about 3 lin. long, with short, unequal, rounded teeth; the corolla is tubular, about 8 lines long.

Species dubia.

14. Acnistus *grandiflorus*. Lycium grandiflorum. *Wild. in R. et Sch.* 4, 689:—foliis ellipticis; calycibus 3-lobis.—Caraccas.

HIMERANTHUS.

The *Jaborosa runcinata* of Jussieu has very properly been separated from the *Jaborosa integrifolia*, Comm. and constituted as a new genus by Prof. Endlicher under the name of *Himeranthus* (Gen. Plant. n. 3860); but as that distinguished botanist probably had no opportunity of seeing the plant in its living state, his character is incomplete in some of its essential features. I therefore propose the following as its true limits, and annex the details of two other species that I met with.

HIMERANTHUS, Endl. (char. reform.)—*Calyx* 5-fidus. *Corolla* hypogyna campanulato-tubulosa, limbo patenti 5-partito, æstivatione plicato. *Stamina* 5 nunc fauci subsessiles, nunc e medio corollæ orta, tubo hinc ad calcem lineolis totidem utrinque pilis divergentibus notato; filamenta brevissima inferne subtenues, apice incrassati in connectivum magnum

I found this plant in 1825, at Arecife, 120 miles westward of Buenos Ayres; it seems to correspond with the *Jaborosa runcinata* of Link and Otto; but as Sir Wm. Hooker justly observes, it has no upright stem, as figured by these authors, for the leaves and peduncles proceed at once from the collar at the summit of the root. The plant seems to propagate itself by running suckers which at intervals strike root into the ground, where they form new plants. The leaves vary from 2 to 3 inches in length, and 1½ to 2 in. in breadth; the petioles being about an inch, and the peduncles about 1¼ in. long; at times they are somewhat larger. The calyx is subfleshy, with 5 equal, acute, erect, persistent lobes. The corolla is campanular, somewhat contracted in the mouth, the border being 5-partite, with oblong acuminate lobes, and a plicate æstivation; it is of a yellowish white colour, fleshy, quite glabrous outside, and hairy at base within. The stamens have very short filaments inserted below the mouth, expanding into a thick fleshy connective, to which the 2-celled anther, bursting longitudinally, is dorsally attached. The ovarium is green, globular, half immersed in the fleshy torus; the style is simple, white, slightly curved, and is distinctly tubular at the summit to some depth; the stigma is clavate, and indistinctly 2-lobed. I met with no seed sufficiently advanced to show any indication of the embryo, the character of which I have stated on the authority of Endlicher.*

From the above description it will be seen that the genus *Himeranthus* is very distinct from the *Jaborosa* of Jussieu, founded originally upon the plant discovered by Commerson, which is the only species known, and which has been very accurately described and figured by Sir Wm. Hooker, (*Bot. Mag. tab*, 3489), from living specimens raised in Glasgow, from seeds sent home by Mr. Tweedie.†.

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* A drawing of this species is given in plate 4, A. of the "Illustrations of South American Plants."

† I did not find any specimen of Jaborosa during my journey, but judging from the excellent figure above mentioned and the dried specimens I

2. Himeranthus *erosus* (n. sp.);—foliis subintegris, vel eroso-sinuatis, carnosulis, petiolatis, petiolo crasso sulcato; pedunculo petiolo 3-plo-longiori; corollæ lobis integris, acutis.—In Provincia Bonariensi.

I found this plant at some considerable distance from Buenos Ayres; the leaves are more than double the length of the former species, comparatively broader, more entire, the petiole being about 2½ in. long, very fleshy, semiterete, with slightly decurrent margins. The peduncles are from 4 to 6 in. long; the flowers are larger, the tube of the corolla not so much contracted in the mouth, and the segments of the border larger in proportion; the filaments are nearly half the length of the tube of the corolla, are fixed about the middle above the villous lines described in the last species; the style is hollow at the apex for one-sixth of its length, and the stigma, with three expanded, obtuse, and almost obsolete lobes, is exserted. Specimens of this plant exist in Sir William Hooker's herbarium, gathered by Dr. Gillies.*

3. Himeranthus *tridentatus* (n. sp.);—foliis ovatis, angulato-

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have seen, I subjoin what I consider to be an amended character of this genus.

JABOROSA, Juss.—*Calyx* 5-fidus, *Corolla* hypogyna, tubo longissimo infundibuliformi, limbo plicato, 5-partito, laciniis longis, valde acuminatis sinuatis; pedunculo petiolo 2-plo longiori; corollæ lobis oblongis, obtusis, 3-dentatis.—Bonaria.

This species I found also in the province of Buenos Ayres, in 1826, the only specimen of which was afterwards much destroyed, but I preserved the drawing made on the spot.* The leaves are far more membranaceous and more entire than the former species. The lobes of the corolla are longer, broader, more obtuse, and 3-dentate.

DORYSTIGMA.

Among the plants that I found in my last rapid journey over the lofty chain of the Andes, in 1825, were two species, one of which was also collected about the same time by Doctor Gillies, from whose specimens it was figured and well described by Sir William Hooker in his *Bot. Misc.* 1, 347, *tab.* 71, under the name of *Jaborosa caulescens.* The difference in the stamens and the stigma, the presence of stipular bracts, a somewhat ascending stem, and a far more rigid and dry habit, constitute the ground upon which I propose to separate it from *Jaborosa,* from which genus it differs far more strikingly than *Himeranthus.* The following is offered as its generic character, its name being derived from Δορυ *hasta,* and ϛιγμα on account of its lance-shaped stigma.

DORYSTIGMA, (gen. nov.).—*Calyx* profunde 5-fidus. *Corolla* hypogyna, infundibuliformi-tubulosa, intus hirsuta, limbo plicato, 5-partito. *Stamina* 5, corollæ fauci inserta, inclusa; filamenta breves; antheræ virides, oblongæ, 2-lobæ, lateraliter valde compressæ, incurvæ, apice acuminatæ, longitudinaliter dehiscentes, basi affixæ. *Ovarium* 2-loculare, placentis dissepimento adnatis, multi-ovulatis. *Stylus* simplex, inclusus. *Stigma* magnum, crassum, stylo utrinque adnatum, acutum, lanceolato-obcordiforme. *Bacca* calyce suffulta, 2-locularis. *Semina* plurima reniformia. *Embryo* intra albumen carnosum filiformis, annularis.

Herbæ *Andicolæ, inferne radicantes, prostratæ, vel subadscen-*

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* The above species is also figured in the same work, tab. 4. D.

dentes; foliis petiolatis, subternis, lyratis, vel pinnatifido-laciniatis, denticulatis; pedunculis *extra-axillaribus, solitariis,* 1-*floris, bracteatis.*

1. Dorystigma *caulescens.* Jaborosa caulescens, *Hook. Bot. Misc. loc. cit.*;—caulibus plurimis; foliis suboppositis vel ternis, lyrato-pinnatifidis, spinuloso-dentatis, petiolatis; floribus 3-4 in quaque axilla; pedunculis brevibus; bracteis parvis, subulatis.—In Andibus Chilensium.

Sir William Hooker's above mentioned figure affords so admirable a representation of this plant, and is accompanied by so good a description, that it is needless to make any further remark, than that the bracts are scarcely half an inch long, very slender, and subulately acuminate. Excepting in their relative size, there is little difference in the flower of this and the following species; the mouth and segments of the corolla are densely lined within with tomentum, the hairs being articulated; the anthers have a distinct mucronate apex, and the filaments are somewhat longer.*

2. Dorystigma *squarrosum,* (n. sp.); Jaborosa decurrens (*Nob. Trav. Chile,* 2, 531);—foliis subternis, longe petiolatis, irregulariter pinnatifido-laciniatis, laciniis eroso-denticulatis, petiolo alato, pedunculo duplo longiori; bracteis longissimis, lineari-spathulatis, pedunculo fere æqualibus.—In An-

in consistence; the petiole is about 3 in. long, fleshy, round beneath, flat above, with a somewhat broad decurrent ciliated margin; the leaves are generally ternate, and the united bases of the foot-stalks give a knotty form to the axils, which are about ½ in. apart. The number of peduncles and bracts generally correspond with that of the leaves. It may be doubted whether the slender leaflets seen in the axils should be considered as bracts or stipules, neither of which organs are usually met with in the Solanaceous group of plants; but I have adopted the view of Sir Wm. Hooker, who considers them as bracts, which is justified by the circumstance of their being always seen rather within the line of the petioles; they are linear, slender at base, about 1½ in. long, swelling at the extremity into a spathulate blade, with a long cuspidate point. The peduncles are round, rather slender, about 1½ in. long, somewhat erect, 1-flowered. The calyx is persistent, swelling about the torus, somewhat membranaceous above, and divided into 5 equal, long, tapering, erect segments, furnished with long articulate pubescence. The corolla is of a lurid cream-colour below the border, which is white, both externally and within, where it is covered with woolly tomentum; the tube is funnel-shaped, rather more than ½ in. long, the border being divided into 5 rather acute, expanding lobes, which are somewhat plicate at base; the anthers are almost sessile, and fixed by their base below the mouth of the corolla, they are deeply 2-lobed and laterally compressed, so that they stand out in a circular ring around the stigma, they are of a lurid green, and burst in front somewhat laterally by a longitudinal fissure, throwing out a yellowish-coloured pollen. The ovarium is globular, somewhat flattened at the summit, and divided into 2, 3, or 5 indistinct lobes. The style is erect, cylindrical, somewhat enlarging at its extremity. The stigma is oblong, cordate at base, tapering, obtuse at apex, formed of 2 indistinct flattened adnate lobes, fleshy, green, and shining. The berry is cernuous, fleshy, and 2-celled; the seeds are flattened, reniform, subrhomboidal, with a marginal hilum; the testa is somewhat fleshy and rugous; the embryo is slender, filiform, almost annular, and imbedded in fleshy albumen; the radicle, which points toward the hilum, is very long, straight at the extremity, and bent above; the cotyledons are short, slender, semiterete, curved, and terminate near the extremity of the radicle.*

TRECHONÆTES.

Among the few interesting plants gathered in my journey over the Cordillera in the January, 1825, was one found upon the eastern descent of the Cumbre, towards Las Cuevas, at an altitude of 11,500 feet, in a very dry and arid situation, which circumstance suggested the above generic name, from τρηχῶ *locus asper*, ναΐτης *incola*. Specimens of the same plant have lately been sent to this country by Mr. Bridges; and as it has not been yet described, I now offer the result of my long recorded observations, from which it will be seen to possess characters very distinct from *Jaborosa* and its congeners.

TRECHONÆTES, (gen. nov.).—*Calyx* 5-partitus. *Corolla* hypogyna, late campanulata, limbo plicato, 5-partito, laciniis latis, acutis. *Stamina* omnino libera, inclusa; filamenta longa, filiformia, imo tubi adnata; antheræ connectivo nullo, dorso affixæ, 2-lobæ, rotundatæ, basi divaricatæ, longitudinaliter dehiscentes. *Ovarium* rotundum, toro carnoso ortum, bus; foliis subcoriaceis, pinnatifido-laciniatis, lobis dentatis, acutis; floribus subsolitariis; pedunculis extra-axillaribus, bractea brevi tenui subulata apice lanata instructis.—In Andibus altissimis Chilensibus.

This curious plant is evidently allied to the *Jaborosa* group of *Solaneæ*, but it has an aspect very different from the others, both in its general pubescence and more lurid hue, as well as by its broad, duller, campanular flowers, with stamens quite free and inserted in the base of the corolla. The stem is fusiform, extending horizontally in the stony soil, from which radiate several half prostrate branching stems, whose axils are distinct although approximate; the leaves are sometimes alternate, sometimes subopposite; the petiole is fleshy, round below, flattened or caniculate above, with broad decurrent margins, and about 2 in. long; the blade is about 2 or 2½ in. long, and 1½ in. broad at the extreme points; they are deeply and somewhat pinnately laciniate, the segments being rather narrow, somewhat parallel and roundish, the margin being sometimes entire, with a cuspidate apex, but more generally sharply toothed with intervening sinuosities; they are somewhat erect, covered with long soft pubescence, the hairs being composed of several broad articulations; the peduncles are about half the length of the petioles, and round; the calyx is divided into five rather acute segments, very pubescent outside, glabrous within; the corolla is broadly campanulate, the tube being slightly pubescent on both sides; the lobes are ovate, acute, terminated at the apex by a somewhat terete woolly spur, the margins being whitish, membranaceous, the more central portion as well as the tube being marked with numerous purplish brown reticulations, and a few scattered hairs; the filaments are slender, nearly the length of the tube of the corolla, quite free to the base, whence they originate from a small adnate ring; they are smooth and slightly pubescent at base, erect, and curving downward toward the apex; the anthers, which are thus inverted, consist of two nearly globular adnate lobes, divaricate at base, bursting longitudinally by lateral fissures; they are without any sensible connective, and are fixed dorsally near the base, on the apex of the filament. The ovarium is round, pubescent, and partially imbedded in the fleshy torus, is 2-celled, with many ovules, adnate to a central enlargement of the dissepiment; the stigma is clavate, consisting of 2 adnate corrugated lobes. At the time I collected this plant, there was no indication of fruit, nor is any seen in Mr. Bridges's specimens, but from analogy it may be assumed to be a berry.*

2. Trechonætes *sativa* (n. sp.);—caulibus plurimis, confertis, subadscendentibus, pubescentibus; foliis ternis, inæqualibus, oblongis, angulato-sinuatis, vel pinnatifido-laciniatis, laciniis angulato-sinuatis, lobis mucrone glanduloso apiculatis, utrinque parce pilosulis; floribus plurimis, pedunculatis, aggregatis, pubescentibus, bracteis totidem spathulatis, integris, subglabris.—In Andibus Provinciæ Tucumanensis. *v. s. in herb. Hooker, a Tweedio lecta*, n. 1253.

This plant, according to Tweedie, is cultivated in Tucuman, where it is "used as mustard," from which it may be inferred that the seeds have a pungent taste, for no part of the dried plant exhibits any such flavour. It grows in broad patches about a foot high; the stems are covered with soft hairs, and the axils are about 3 in. apart; the leaves, 3 in each axil, are of unequal size, the largest being 7 in. long, including the ovate, acute lobes, with undulated margins, and terminated by a woolly rostrate apex; the stamens are included; the filaments, entirely free, slender, glabrous, erect, and recurved at the summit, arise from the points of a slender, adnate, 5-toothed ring in the base of the corolla; the anthers are ovate, cordate, 2-lobed. The ovarium is round and smooth; the style short and thick; the stigma clavate, broad, and 2-lobed.

PIONANDRA.

Under this name I propose to found a genus comprising some Solanaceous small trees and arborescent shrubs with wide spreading branches, and long racemes of flowers, similar to three species that I found in the Organ Mountains in 1829 and 1838. The *Witheringia diploconos*,* figured by Von Martius in his Nov. Gen. et Sp. vol. III. p. 76, tab. 229, evidently belongs to this genus, the characters of which may be thus defined.

PIONANDRA (gen. nov.) *Calyx* parvus, 5-partitus, persistens. *Corolla* hypogyna, tubo brevissimo, limbo amplo, 5-partito, lobis 5 subcarnosis basi inflatis vel lanceolatis tenuioribus, æstivatione marginibus (fere valvatis) introflexis, interdum mucroni lineari rostratis. *Stamina* 5, æqualia, circa stylum conniventes; *filamenta* breves, erecta, ex annulo plus minusve carnoso tubo adnato orta, crassa, lata, sæpissime utrinque auriculata, nunc figura sigmoidea recurvata, nunc

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* The genus *Witheringia*, according to the latest arrangement in the Repert. Bot. of Walpers, 3.29, contains many (24) heterogeneous species, and it appears to me that very few of those enumerated, harmonize with the generic character as established by L'Heritier. In the herbarium of Sir William Hooker, I can find no plant corresponding with the typical species; and in the British Museum where L'Heritier's original specimens are deposited, there are two plants marked *Witheringia solanacea*, both different, and neither answering to the figure and description of the founder of the genus. In the absence, therefore, of the typical plant, without any good description of it, or any satisfactory drawing of its details, without even the knowledge of the country where the original was obtained, nor by whom collected, it is difficult to understand the true limits of the genus.

rectiora, in connectivum magnum carnosum frequenter incurvum continua; *antheræ* 2-loculares, dorso adnatæ, lobis oblongis, longitudinaliter dehiscentibus, apice cervice gibbo, utrinque poro hiante, jugatæ. *Ovarium* superum, obovato-oblongum, cum stylo articulatum, 2-loculare, placentis lunulatis, utrinque semiuiferis, septo adnatis, multiovulatis. *Stylus* nunc brevis, crassus, turbinato-infundibuliformis, apice cavus, nunc gracilior, longus, subfusiformis, apice incrassatus. *Stigma* sub—2-labiatum, intus glandulis, 2 instructum. *Bacca* magna, pulposa, 2-locularis. *Semina* numerosa, structura ignota.

Frutices, vel arbusculæ, *in America meridionali intertropica indigena, suborgyales, ramosissimi*, ramis *dichotomis*, foliis *petiolatis geminis, subintegris plerique cordatis, altero minori;* racemis *extra-axillaribus sæpissimè in dichotomia ramulorum*; floribus *pedicellatis, secundis*, pedicellis *articulatis, sæpe deciduis.*

Derivatio ex πιων *pinguis*, ανηρ *stamen*, propter antherarum connectivum magnum.

I propose to separate the different species into two sections, with curved and straight stamens.

§ I. CERATOSTEMON. *Stamina valde curvata, crassa, apice conniventes.*

where they are subserrulated and ciliate; the margin is very entire and somewhat membranous; they are about 4½ inches long, exclusive of the petiole, and 2½ inches broad, the twin leaf being about an inch shorter: they are quite smooth and shining above, their surface being covered with very numerous, minute, raised points, which are somewhat pellucid when viewed through the light; below they are quite smooth, of a pale glaucous green, apparently glabrous, but when examined by a lens are seen covered with a very fine pubescence; they are somewhat 5-nerved at base, the midrib and nerves being slender and prominent. The petiole is channelled above, slightly pubescent, and 1½ inch long. The racemes of flowers, about 3 inches long, generally spring from the stem on one side a little above the origin of the pair of leaves, and sometimes out of the bifurcation of the branches; the pedicels all arising from one side of the peduncle, are alternately arranged in two rows, and articulated at a little distance from their origin, where the greater number fall off: they are about an inch long and glabrous. The calyx is small and fleshy, and does not increase in size with the fruit, its segments being acute and slightly pubescent. The corolla is of a lurid greenish white, fleshy, and about an inch in diameter when fully expanded; it has a short campanular tube, which is distinctly saccate and obtusely 5-angular at the corners opposite the stamens; the border is cleft into 5 equal, ovate, acute segments, having very woolly and slightly inflected margins, which in the bud present an induplicate œstivation nearly valvate, each segment has externally at its apex, a long terete spurlike woolly process; when the flower is fully open, the lobes are quite patent: the corolla outside is quite glabrous, but it is lined within with a short woolly white tomentum, and near the base of the tube, is seen a semiterete fleshy annular staminiferous ring. The stamens are very large and conspicuous, quite glabrous, and alternate with the lobes of the corolla; the filaments are united at their base into a very short tube, which springs from the annular ring alluded to; they are dilated and fleshy, quickly expanding beneath the anthers into 2 prominent auricular lobes, and terminate in a remarkably large fleshy gibbous connective supporting the adnate anthers, which consist of 2 distinct and separate lobes, somewhat divaricate at base, and united at their summit by a cervix, forming a bottle-necked apex, in which two distinct pores are seen: the lobes, however, present a decided longitudinal dehiscence by a central furrow; the summits of the anthers all converge round the style. The ovarium is oval, quite smooth, 2-celled, with a broadly lunulate placenta arising from each side of the dissepiment, around which numerous ovules are closely arranged. The style is short, thick, scarcely longer than the ovarium, it is hollow and tubular more than half way down. The stigma is a cyathiform fleshy cup, obsoletely 2-lobed, terminating the style, having within its mouth 2 fleshy glands. The berry grows to a large size; the largest that I saw of a kindred species which was far from mature, was oblong, and nearly 2 inches in length, in which the seeds were not ripe enough for examination.*

2. Pionandra *pubescens* (n. sp.)—Arbuscula, tota pubescens: foliis 5-nerviis, obovatis, basi obtusis, vix cordatis, apice attenuatis integris, utrinque pubescentibus; racemis secundis, folio brevioribus.—Rio de Janeiro, Serra Organensi.

racemis secundis, folio brevioribus: bacca magna.—Rio de Janeiro, Serrâ Organensi.

This species is very distinct from the two former, and approaches more in the form and size of its leaves to the *Solanum capsicoides*, Mart. which also belongs to this genus. I did not find it in flower, but from the resemblance of its habit to those above described, I imagine it will be found to belong to this section. The berry, though far from mature, measures nearly 1½ in length and ¾ inch in diameter.

4. Pionandra *fragrans*. Solanum fragrans *Hook. Bot. Mag. tab.* 3684.—Arborescens: foliis geminis, 5-nerviis, inæqualibus, ovatis, majori basi sub-elliptico, altero cordato, integerrimis, glaberrimis, supra lucidis, albo-punctulatis, infrà argenteis, marginibus paulo incrassatis: racemi floribus secundis, pedicellis inferioribus maxime elongatis: corolla late campanulata, profunde 5-partita, staminibus geniculatis, stigmate dilatato, concavo—Guiana. *v. s. in. herb. Hooker.*

From Sir Wm. Hooker's excellent figure of this species, it will be seen how closely it approaches *P. floribunda* in its general habit, and in the size of its leaves, one of which only is here cordate. The racemes are 4 inches long, arising from the forks of the dichotomous branchlets, the pedicels are unequal in length and articulate: the calyx is somewhat pentagonous, with triangular lobes and ciliate margins: the segments of the corolla are lanceolate as in *P. capsicoides.*

5. Pionandra *diploconos.* Witheringia diploconos *Mart. Gen. et spec.* 3.77, *tab.* 229:—fruticosa, glabra: foliis sub 5-nerviis, ovatis, acuminatis, basi subcordatis, integris, utrinque glabris; racemis alaribus, folio longioribus.—Rio Janeiro et Tejuca.

It is only from the description of Dr. von Martius that I am acquainted with this species which certainly approaches close to my *P. floribunda:* the leaves, however, are entirely glabrous, and not punctulate; they are little more than half their size, and less cordate at base than in that species. The raceme is much longer than the leaf. The calyx is denticulated, the stamens are ventricose, but the fleshy connective is less curved: the filaments are expanded below, but are not auriculate: it has the fleshy perigynous ring, and the annular disc, as well as the short tubular broad style and stigma of *P. floribunda*. Its flowers are odorous, which I do not remember to have noticed in the Organ Mountain species, and the lobes of the corolla want the rostrate apical appendage so conspicuous in that species.

6. Pionandra *Gardneri* (n. sp.)—fruticosa: foliis geminis, altero minori, sub 5-nerviis, cordato-ovatis, valde acuminatis, utrinque pilis longis mollibus articulatis, infraque pallide tomentosis, margine ciliatis et eroso-denticulatis: racemis è bifurcatione secundis, folio multo longioribus.—San Caetano, Prov. Minar. General. Braziliæ.—*Gardner, No.* 5041.

A very distinct species remarkable for the length of its articulate glandular hairs. It forms a shrub about 4 feet high: its larger leaves are 3¼ in. long and 2 in. broad on a petiole 1¾ in. in length, the smaller leaves are 2¾ in. long and 1¾ in. broad on a petiole ¾ in. The raceme is 7 in. long: the calyx is 5-angled with broadish deep segments, very pubescent, and somewhat membranaceous: the corolla is very pubescent outside, smooth within, its segments being broad and acute: the stamens and pistillum resemble those of *P. floribunda*.

broad on a petiole of 1½ in.: the racemes are about 7 in. in length: the corolla of a rosy hue has a short tube, with 5 oblong segments reflected at tip: the 5 equal stamens are included, the filaments are short and thick, the auricular lobes though small and hidden by the anthers are distinct and free: the anthers are large, curved, and approximate: the berry is reddish, about the size of a pigeon's egg, and 2-celled: this is doubtless the same fruit that I saw in the markets of Lima, where it is commonly used for cooking in lieu of the ordinary Tomate, the flavour of which it greatly resembles. Tweedie remarks that it is used in Buenos Ayres for the same purpose, but not ordinarily, for I never observed it.

8. Pionandra *pendula*. Solanum pendulum, *R. et P. Flor. Peruv.* 2.39, *tab.* 174, *non Link*:—fruticosa: foliis alternis, obovatis, simplicibus, vel geminis, aut pinnatis, utrinque pubescentibus, integerrimis, venosissimis, foliolis 2—6 nis, oblique cordatis, acutissimis, impari majori: racemis dependentibus, furcatis, pedicellis articulatis, sæpe deciduis: fructu magno pyriformi—Peruvia in Muña.

From the figure of Ruiz and Pavon, I do not doubt this species belongs to this genus; and although the leaves are sometimes pinnate, they are often simple and cordate: the racemes, as in the other species, generally grow out of the bifurcation of the branchlets, and have many fleshy, secund flowers, with articulated pedicels: the fruit is also large, 2-celled, with lunulated placentations.

9. Pionandra *obliqua*. Solanum obliquum *R. et P. Fl. Per.* 2.35, *tab.* 165, *a*:—glabra: foliis simplicibus, sub 5-nerviis, obovatis, oblique cordatis, acutis, supra nitidis, leviter pubescentibus: racemis extra-axillaribus, recurvis, floribus duplici serie secundis, pedicellis articulatis, inferioribus maxime longioribus—Peruvia ad Chinchao.

There can be no doubt from the figure and description above cited, that this species possess all the essential characters of *Pionandra*.

10. Pionandra *viridiflora*. Solanum viridiflorum *R. et P. Fl. Per.* 2.38, *tab.* 173, *b*:—fruticosa, villosa, caule tereti:

foliis geminatis, altero minori, sub 5-nerviis, ovatis, acutis, rotundato-cordatis, baseos lateribus incumbentibus, utrinque pilosis, pilis flavis, articulatis, infra pallidioribus; racemo e bifurcatione, folio breviori, floribus secundis, pedicellis articulatis: fructo magno, ovali—Peruvia (*v. s. in herb. Hooker alabastris nondum maturis.*)

A species closely allied to *P. pendula*, and very near *P. betacea*, but with much smaller leaves: the larger ones measure 7 inches in length, and are 5½ in. broad, on a petiole 1½ in.: the smaller being 4½ in. long, and 3½ in. broad, on a petiole of the same length of the basal lobes 1 in. long: the calyx is pubescent, 5-angular, and somewhat campanulate, with 5 short lobes: the corolla is tomentous outside, with woolly margins: the stamens are somewhat long, with a thickened fleshy, somewhat scabrid connective: the style is considerably swollen in the middle, and the stigma cup-shaped: the berry is of the size of that of *P. betacea.*

11. Pionandra *premnæfolia.* Solanum premnæfolium. *Dun. mss:*—tota pubescens: fruticosa, foliis geminis, altero minori, 5-nerviis, cordato-ovatis: racemis folio multo longioribus, pedicellis articulatis, deciduis.—Brazilia in Bahiam (*a Luccombe*) et Prov. San. Pauli (*a Bowie et Cunningham lecta*) *v. s. in Herb. Mus. Brit.*

In habit this species much resembles *P. floribunda*; but centi-mollibus, supra pilis articulatis sparse adspersis, pedunculis filiformibus, fructiferis deflexis.—Brasilia, Prov. Rio de Janeiro et Min. Geraes.

I have this species from Cape Frio and Villa Ricca in the province of Minas Geraes. Its leaves are nearly 6 inches long and 2 inches broad; the racemes are pubescent and about as long as the leaf, with secund flowers, the pedicels being articulated a little above their base. The calyx is pubescent; but the corolla is glabrous, and of much more membranaceous structure than any of the former species with lanceolate segments: the stamens are more slender, nearly straight; the filaments are united upon a somewhat membranous perigynous ring, and although not fleshy, are dilated and expanded in a bilobed form below the anthers: the connective is thin, flat, tapering above; the anther cells are turgid, burst longitudinally, and as in *P. floribunda* are constricted near the summit by a collar, which is surmounted by an emarginate globular apex, that opens by two distinct pores. The ovarium is smaller, and together with the style and stigma, is quite glabrous: the style is rather slender, thickening toward the summit, and is as long as the stamens; the stigma, though much smaller, resembles that of the before-mentioned species.*

13. Pionandra *divaricata*. Witheringia divaricata *Mart. Nov. Gen. et Sp.* 3.75, *tab.* 228:—suffruticosa, tota subtiliter pubescens: foliis ovato-lanceolatis ovatisve, acuminatis, basi subrotundatis, racemis e bifurcatione alaribus, simplicibus, paucifloris, folio superantibus.—Serra do Mar, Brasiliæ.

This species very closely resembles the last, but its leaves are not more than 4 inches long, and 1 inch broad, generally much smaller, pubescent on both sides, and nearly equilateral; the lobes of the calyx are ciliate, often serrulate; the filaments are dilated, and membranaceous below, expanding above in a large inflated connective; the anther cells are straight, sub 4-gonous, ventricose and turgid, of a. yellow colour; the style is longer than the stamens, and with the stigma intermediate between that of the last species and of *P. floribunda.* It approaches *P. ciliata,* but the leaves are smaller, broader in proportion, not so much attenuated at the apex, and less pubescent. The racemes are shorter, 2 to 6 inches long, with 4—6 to 10 flowers, which have the articulation of the pedicels close to the peduncle, so that when they fall off, the stem scarcely exhibits the persistent bases of the stalks observed in the other species.

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* A figure of this species with details is given in PLATE IX of the "Illustrations of South American Plants."

14. Pionandra *Tegore.* Solanum Tegore *Aubl.* 212. tab. 84;—frutescens, villosa: foliis inferioribus amplissimis, sinuato-pinnatifidis superioribus ovatis, cordatis, acutis; racemis secundis, e bifurcatione alaribus.—Guiana. *v. s. in Herb. Mus. Brit. et Herb. Hooker.*

The upper leaves are about the size of those of *P. pubescens,* and in like manner, as well as the stems and peduncle, are covered with articulate hairs; they are also geminate, unequal, and sub 5-nerved. The racemes are very short, and secund, growing out of the bifurcation of the branches; the pedicels are also articulated, and deciduous, characters quite in conformity with all the species above enumerated. Aublet describes and figures the fleshy ring at the base of the tube larger, and divided into 3 or 5 segments, as shown in the figure of Ruiz and Pavon above quoted.

15. Pionandra *Hartwegii* (n. sp.);—fruticosa: foliis geminis, altero minori, 5-nerviis, cordato ovatis, integris, superne lucidis, parce pilosis, infra ferrugineo-pruinoso-punctatis; racemis e bifurcatione subscorpioideis, folio multo longioribus.—Columbia (*Hartweg, n.* 1297) *v. s. in herb. Hooker.*

Stems round, dark brown, subpubescent: leaves 4½ in long, 2¼ in broad, on a petiole 1¼ in length, the smaller one 2¼ in long, 1¾ in broad, on a petiole 1 in. long; raceme pubescent, 8½ in. long; pedicels articulated, 1¼ to 1½ in. long; calyx small, 5-gonous, glabrous, lobes short, obtuse, with a very small tooth in the apex; corolla with linear, lanceolate segments, an inch long, obtuse at the apex, smooth with floccose margins; anthers 2-celled, very long, equal, linear, erect, somewhat scabrous, opening by an apical pore, and by a lateral fissure in each cell: style obtuse; stigma clavate.

16. Pionandra *coriacea,* (n. sp.):—fruticosa, foliis geminis, magnis, glabris, valde coriaceis, cordato-ovatis, 5-nerviis, altero minori, supra punctulatis, infra pruinosis: racemis brevibus, scorpioideis; floribus secundis, pedicellis articulatis, approximatis; corolla tubo brevi, laciniis lanceolatis: antheris linearibus, erectis, connectivo crasso.—Peruvia (*Mathews,* 1971) *v. s. in herb. Hooker.*

The leaves of this species are remarkably thick, opaque and coriaceous, about 8 inches long, 5 in. wide, with a petiole 2 in. long, the smaller ones 5 inches long, and 3½ in. wide, the petiole being the same length as the basal lobes.

17. Pionandra *Cajanumensis.* Solanum Cajanumense, *H. B. K.* 3.47:—fruticosa, ramulis hirsutis: foliis solitariis, subrotundo-ovatis, breviter acuminatis, cordatis, integerrimis, hirsuto-pilosis; racemis supra-axillaribus, trifidis, floribus unilateralibus.—Nova Granada.

The leaves are described as 7 inches long, 5½ inches wide. The stamens included, the filaments short and much dilated, the anthers opening by pores, according to Kunth, and by lateral fissures, according to Bonpland. The berry is 2 inches in length.

SPECIES DUBIÆ.

18. Pionandra *crotonifolia*. Solanum crotonifolium, *H. B. K.* 3.30 *Dun. Syn.* 18:—fruticosa: foliis geminis, oblongis augusto-acuminatis, basi rotundatis et inæqualibus, subrepandis, supra canescenti-pubescentibus, subtus molliter albo-tomentosis: racemis supra-axillaribus, sæpe bifidis, floribus unilateralibus.—Nova Granada.

The leaves are 4-5 inches long, 1½ to 2 inches broad, with stellate pubescence; the racemes are short, sometimes bifid, and the flowers have articulated pedicels.

19. Pionandra *Narensis*. Solanum Narense, *H. B. K.* 3.31. *Dun. Syn.* 18:—fruticosa, ramis tomentosis, foliis geminis, altero minori, ovatis, acutis, basi cordatis et inæqualibus, supra canescenti—subtus albido—tomentosis, mollibus: inferioribus sinuato-angulatis; racemis lateralibus, bifidis; floribus unilateralibus.—Nova Granada.

The upper leaves are 5-6 inches long, 2½-3 inches broad; the lower ones 7-8 inches long, and 5-6 inches broad; all with stellate pubescence.

20. Pionandra *trachyphylla*. Solanum trachyphyllum, *H. B. K.*

sive Linnæan genus *Solanum*, which is greatly required, many other species will be found to come within the limits of *Pionandra*. It is with much doubt I have placed here the last four species which are only known from the short descriptions quoted; when examined with more attention they may probably be found to belong to another group, many species of which I have observed in the splendid herbarium of Sir Wm. Hooker; I allude to such as approach *S. conicum R. & P. Flor. Peruv. tab.* 172, *b.* Many of these have simple, others pinnate leaves, sometimes smooth, often with stellate tomentum; they have racemes either simple or scorpioid, often dichotomously branched, either extra-axillary or growing out of the bifurcation of the branches, they have very long narrow coriaceous anthers, and a peculiar form of style; a section of this same group, numerous in species, have their stems and petioles aculeate, such as *S. torvum loc. supra cit. tab.* 175 *a. S. lanatum*, *tab.* 174 *b*, *S. incarceratum*, *tab.* 176. The present arrangement of the genus *Solanum* comprising upwards of 500 species, is certainly very defective, the form of the leaves, offering very unsatisfactory, and uncertain characters on which to found any subdivisions; far better elements will be found to exist in the floral characters assisted by the particular habit of the several species; much therefore may be expected from the distinguished author of the well-known monograph on *Solanum*, who has undertaken the arrangement of the nat. ord. Solaneæ, for the forthcoming volume of the Prodromus of De Candolle.

SOREMA.

The following details of *Nolana paradoxa*, *Lindl.*, were made as far back as 1823, and notwithstanding several species of *Nolana* have already been figured at different times, I am not aware that the carpological characters of the order *Nolanaceæ* have hitherto been illustrated. The plant in question, which I found near the sea-shore at Concon, the place of my residence in Chile, is now called by Dr. Lindley, *Sorema paradoxa*, in a very interesting paper which he has given on the divisions of this order in the *Botanical Register for Sept.* 1844, *tab.* 46. Although much additional knowledge has thus been afforded, the real limits of *Nolanaceæ* are not yet fully defined, and the true place of its arrangement in the Natural system not yet quite agreed on. Dr. Lindley, in the last edition of his "*Natural System,*" p. 229, places it near *Convolvulaceæ,* with which it accords in its expanded funnel-shaped plicated corolla. Others have combined it with *Borragineæ,* with which it agrees in having a plicated corolla, included stamens, and distinct nuts. Prof. Endlicher, in his *Genera Plantarum,* p. 655, following nearly the views of Dr. Lindley, places it as a sub-order, or rather as an aberrant group "*Convolvulaceis affinia.*" After a careful examination of its relations, I venture to suggest for it a distinct place in the system, at the beginning of the class *Tubulifloræ* of Endl., immediately following the *Borragineæ,* in the *Nuculiferæ* of that eminent Botanist, so that intermediate with *Convolvulaceæ,* the *Nolanaceæ* will thus retain their close affinity towards *Solanaceæ,* for it is especially with *Petunia,* &c., that they agree in their convoluted and deeply plicated corolla with unequal included stamens, and not less with many others among *Solaneæ* in their geminate or fasciculate leaves and general habit; and while they also accord in the

Gen. Plant, tom. 2, *tab.* 69—73), it is not now necessary to determine, it being sufficient for our present purpose to indicate the fact, and to add that they differ from the whole of that family, in the form and position of their embryo, as well as in habit and inflorescence. With *Convolvulaceæ*, as Prof. Lindley remarks, many analogies exist, but they differ in their simple, not imbricate calyx, in their distinct ovaria and the important character of their embryo. I shall presently attempt to show that the hitherto anomalous genus *Grabowskya*, is referrible to a position between *Borragineæ* and *Nolaneæ*, and *Dichondreæ* will then form an excellent connecting link between *Nolaneæ* and *Convolvuleæ*, to the former of which this small group has a very close affinity, on account of the almost gynobasic origin of its nearly distinct carpels, and also because its embryo is really cyclical, notwithstanding that the cotyledons, at their extremity, are bent back in a sigmoid form, after having completed more than an entire helix, somewhat in the manner of the embryo of *Convolvulus*, but it is to be remarked, that although the cotyledons of *Dichondra* are broader than the radicle, and more foliaceous than those of *Nolaneæ*, they are simply parallel, and have not their margins crumpled and conduplicated, as in the true *Convolvuleæ*. Doctor Lindley observes (*Nat. Syst.* 230) that "if we attend to the embryo, they will stand among *Convolvulaceæ*, if to the carpels, among *Nolanaceæ*: upon the whole the latter must be accounted of the most importance, and consequently it is with *Nolanaceæ* that I arrange them." I find on examining the seed of *Dichondra repens*, that the utricle falls away from its receptacular attachment, showing a distinctly round perforate aperture at base, and on the receptacle are to be seen opposite the opening, two distinct prominences, corresponding to what, by analogy, may be considered as of a similar nature to the areolar processes observed in *Nolaneæ* and *Grabowskya*. The reasons above offered will therefore probably justify the position I have ventured to assign for *Nolanaceæ* in the general system, so that without violating the connexion already established by the authority of the most distinguished Botanists, between *Dichondreæ* and *Convolvuleæ*, they will stand after *Borragineæ*, and before *Convolvuleæ* through the intermedium of *Dichondreæ.*

The new genera of *Nolanaceæ*, proposed as before alluded to by Doctor Lindley, although not so well distinguished by characters derived from the inflorescence, are nevertheless well marked by a distinct and peculiar habit, aided by differences of structure in the fruit. Most of the species comprised under *Nolana* and *Sorema*, are succulent prostrate plants with broad fleshy leaves; in the latter genus, the leaves are geminate, the inner one petioled, the outer one sessile, with one of its margins decurrent on the stem. The species included by *Alona*, *Dolia* and *Aplocarya*, are mostly erect plants with a shrubby habit, and approximate or fasciculated linear leaves, many of them being densely covered with tomentum; the flowers of the two last mentioned genera are proportionately very small, those of the others presenting large campanulate flowers, resembling those of *Convolvulus.* It is worthy of remark, that all the plants of this order, grow either within reach of the humidity of the sea, or in inland tracts where the soil is impregnated with

carpio crasso, textura coriacea, spongiosa, 1-locularis, 1-sperma, basi perforata, apertura omnino clausa, operculo a semine demum secedente. *Embryo* filiformis intra albumen carnosam cyclicus, *cotyledonibus* semiteretibus, *radicula* ad hilum spectante.—Herbæ *Chilenses annuæ prostratæ carnosulæ*, floribus *speciosis Convolvulaceis.*

1. Sorema *paradoxa*, Lindl. *Bot. Reg.* 1844, *tab.* 46. Nolana paradoxa *Lindl.* (*non Hook.*) *Bot. Reg. tab.* 865.—prostrata, pubescens: foliis geminatis, ovatis, obtusis, spathulatis, altero subsessili, subdecurrenti; pedunculo axillari, folii longitudine; corollæ limbo amplo, campanulato, cæruleo, fauce albo.—Concon, Chile.

This plant is so well known, that it needs no particular description: all that is worthy of mention is the structure of its fruit, which I do not think has been yet sufficiently detailed. The peculiarity of this genus is, that its many carpels are all perfected into an equal number of 1-seeded *drupes*; I have observed sometimes in the above species, though it rarely happens, that 2—3 nuts are combined into one, which is then 2—3 celled, each cell having a single seed. In habit it approaches the typical genus *Nolana.* The *nut* is unequally angular, rhomboidal, sharp-angular, of a spongy coriaceous consistence, the place of its basal attachment being marked by a small round cicatrice, being the area of a hard cylindrical operculum that closes the channel leading into the included cell. The *seed* which fills the cavity is reniform and compressed, the *testa* is yellow, reticulate, and crisp, the inner integument is a very thin transparent membrane enclosing the *albumen*, which is white, hard and fleshy; the *embryo* is white, filiform, bent in a somewhat spiral form, the *radicle* pointing towards the hilum, or inner aperture of the cell: the *cotyledons*, which together are somewhat more slender than the radicle, are about the same length.*

2. Sorema *atriplicifolia* Lindl. Nolana atriplicifolia *D. Don Sweet. Fl. Gard. n. ser. tab.* 305:—procumbens, subpubes-

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* A figure of this species is given in PLATE X. of the "Illustrations of South American Plants."

cens; foliis spathulatis, radicalibus majoribus, forma *Atriplicis hortensis;* calyce campanulato, lobis ovato-lanceolatis, acutis; corollæ tubo intus flavo, fauce albo, limbo amplo, cæruleo.—Peruvia? an potius Chile?

With this species I am not acquainted, not having met with it in any herbarium that I have seen.

The figure given in the work above cited, exhibits the cauline leaves to be about 1½ in. long, and 1 in. broad, they are wavy, fleshy, broadly oblong, obtuse, subulate at base, on a very broad decurrent petiole, one of the margins of which is continuous along the angle of the stem. The species is known only from cultivated specimens, raised from seeds said to have been obtained from Peru.

3. Sorema *litoralis* (n. sp.)—herbacea, prostrata; radice fusiformi, ramulis plurimis, e collo radiatis; foliis radicalibus majoribus, longe petiolatis, cordato-ovatis, obtusis, caulinis geminis, inæqualibus, obovatis, obtusis, uno sessili, altero subspathulato, late petiolato, decurrenti: floribus solitariis, corolla ampla, cærulea.—Chile, Valparaiso, *v. s. in herb. meo* (*Mathews;*) *in herb. Hooker,* (*Cuming. n.* 627, *Bridges n.* 327.)

This plant grows sparingly on a sandy beach, within reach of the spray of the sea: its tap root descends to a depth of 6 or 8 inches: its branches, springing from the neck, spread

lanceolatis, lineari-acuminatis, oblique sessilibus, margine exteriori decurrenti: floribus axillaribus, solitariis, cœruleis; nuculis distinctis 35, parvis, foveolatis.—Chile ad Concepcionem: (*v. s. in Herb. Hooker, n.* 1322.)

(*To be continued.*)

The late MR. GRIFFITH.

(The following notice of this truly accomplished and lamented Botanist is from the Transactions of the Royal Asiatic Society for June, 1845.)

Mr. Griffith was one of the most accomplished botanists of our day; with the most accurate and extensive acquisition of learning in his department, he combined such a spirit of activity and enterprise as has been rarely equalled, great talents, and a very remarkable power of labour, arrangement, and application. He was born in the year 1810, and was educated at the London University. He went out to India, as an assistant-surgeon on the Madras Establishment, where he arrived on the 24th September 1832, and was shortly afterwards selected by the Bengal Government to examine the botany of the Tenasserim Provinces. He was, in 1835, deputed to Assam, with Dr. M'Clelland, for the purpose of assisting Dr. Wallich in his inspection of the growth of the Tea plant in Assam, and proceeded from thence, in company with Dr. Bayfield, to the then unexplored tracts which lie between Suddiya and Ava, upon the extreme frontier of our Eastern territory. In 1837 he accompanied Captain Pemberton on his mission to the wild countries of Boutan, and two years after was sent, with the army of the Indus, to prosecute inquiries into the botany of Affghanistan. In 1841 he was appointed to the medical duties of Malacca. Upon Dr. Wallich's absence, owing to illness, at the Cape, Mr. Griffith was intrusted with the superintendence of the Botanical Garden at Calcutta, and with the duties of Botanical Professor in the Medical College; but having on the return of Dr. Wallich from the Cape, resumed his place at Malacca, he was there seized with disease of the liver, and died at the early age of thirty-four, having already acquired a distinguished reputation,—having, in every capacity wherein he served the government received its approbation and its thanks; and having given a promise of such further services to botanical science as few have had either the opportunity or the talent of affording. In all his varied and extensive journeys, his courage and his energy never failed him; whether in the jungles of Assam, or the hills of Affghanistan, he still pursued his researches, undeterred by danger, either of disease or of violence; and if disabled, as he was more than once by fever and debility, his first convalescence found him ever ready for fresh exertions. He had thus, by the application of extraordinary powers of observation, and in researches extending through the vast regions which have been enumerated, formed large and valuable collections, and brought together materials for a great botanical work; and he looked with impatience to a period of repose for compiling a Scientific Flora of India, when he sunk under his last fatal illness. Perhaps no more impressive picture of the energy of this house, and all having been previously cleaned and packed, I leave to you to present to Government, for the Honourable Court of Directors, to be sent home without any delay. As you know the trouble I have taken with these collections, and the hopes I had entertained of making them subservient to a general scientific Flora of India, I need not impress on you how much I am interested in their proper disposal, and their being brought properly before the scientific public; and I would say the same regarding my drawings and manuscripts, which will accompany my wife to Calcutta, should it so happen that I leave her.

"In all the plans which I have consigned to your execution, both regarding my wife and collections, I am confident your own feelings will prompt you to every exertion on my account. Asking God's blessing on you and your wife, I bid you good bye."

"Thus far," continues Dr. Moorhead, his medical attendant, "was written at Mr. Griffith's dictation; but I grieve to say the fatal result came to pass yesterday evening, Sunday, 9th February, at half past seven o'clock."

Memoranda on the above by Dr. M'Clelland.—"To the above details, furnished by Dr. Moorhead, I may add that Mr. Griffith's constitution for the last two or three years seemed greatly shattered, his energies alone remaining unchanged. Exposure during his former journeys and travels laid the seeds of a fatal malady in his constitution, while his anxiety about his pursuits and his zeal increased; he became care-worn and haggard in his looks, often complaining of anomalous symptoms marked by an extreme rapidity of pulse, in consequence of which he had left off wine for some years, and was obliged to observe great care and attention in his diet. In Affghanistan he was very nearly carried off by fever, to which he had been subject on his former travels in Assam. No government ever had a more devoted or zealous servant, and I impute much of the evil consequences to his health, to his attempting more than the means at his disposal enabled him to accomplish with justice to himself."

Although Mr. Griffith's researches were directed primarily to Botany, he neglected no opportunity, during his visits to various parts of India, of attending also to other departments of Natural History. Of his zeal and success in Zoology, his collections afford abundant proof; they consist chiefly of mammalia, birds, fishes, and insects. While attached to the army of the Indus, he made, on account of Government, large collections of mammalia, and birds, which have been transmitted to the Honourable Court of Directors, and constitute a valuable addition to the museum at the India House. In mammalogy he collected a considerable number of the smaller animals of Affghanistan, among which are several new to science; but his ornithological collections are still more extensive, having brought together about six hundred specimens, not only from the route of the army, but from several separate excursions to the ranges of mountains north of Cabul. Besides the discovery of a considerable number of new species, the interest of these collections consists in their affording, perhaps, the most extensive and instructive illustration of the geographical distribution of the several species of birds found in India, which has as yet subjects of investigation. Some of his published papers, especially those on Vegetable Impregnation, and the Progressive Development of Organs, have never been excelled, and rarely equalled.

The merits of this accomplished naturalist and devoted labourer in the field of scientific discovery, were appreciated and fostered by the noble President of this Society while at the head of the Government of India, and it is to his Lordship's kindness that the Society are indebted for some of the most interesting parts of the foregoing communication. His loss was also recently noticed in terms of deep regret by the present Governor-General, Sir Henry Hardinge, in His Excellency's Address at the annual distribution of honours and prizes at the Bengal Medical College.

As it is understood that the whole of the valuable materials prepared and collected by Mr. Griffith are consigned to the Directors of the East India Company, the most confident hopes may be cherished that the expectations of the scientific world will not be disappointed of the full benefit which they are calculated, and were intended by him, to confer on botanical and zoological knowledge, and that the irreparable loss entailed on his widow by his early death, and the sudden extinction of all those hopes of fortune, honour, and reward which his extensive knowledge and indomitable energy were so well calculated to raise, will meet with such alleviation as, to the enlightened liberality of the Honourable Court, the great value of his labours, and the forlorn and ill-provided state of his widow and family, may be considered to merit.

A description of OPHIOCARYON PARADOXUM, *on the Snake Nut Tree of Guiana; by* SIR ROBERT HENRY SCHOMBURGK, K.H., &c. &c.

In a paper which I communicated to the Linnæan Society, which was read the 6th June, 1837, and since printed in "The Annals of Natural History," (vol. v, p. 202) I directed the attention of naturalists to a curious fruit, a drupa, the kernel of which, when opened, and the membrane which covered it, being removed, displayed the striking resemblance of a snake coiled up.*

I was not then able to procure the blossoms of the tree which produces this strange fruit, in such an advanced state as to permit me to describe it with accuracy; they were merely small buds, at that time, which left much to conjecture, and thus I was misled to consider the tree as belonging to the order *Terebinthaceæ*, standing near *Anacardieæ*. I have since succeeded in procuring flowers in perfection, and am now enabled to give the following description of the botanical character of this tree, in which I have been much assisted by Mr. Bentham.

OPHIOCARYON, *Schomb.* in Endlicher, Gen. Plant. Suppl. 1, p. 1425.

ORD. NAT. SAPINDACEÆ.

Char. Gen. — Flores polygamo-dioici? masculi desunt. *Hermaphrodito-fœminei*: Sepala 5, valde imbricata, orbicularia; 2 exteriora lateralia minora, posticum cum anticis inter se subæqualia. Petala 5, valde imbricata, gynophoro

lateralibus, introrsis, subglobosis, calyptra laterali decidua dehiscentibus. Pollinis granulæ minutæ, orbiculares, (depressoglobosæ?). Ovarium in gynophoro staminifero sessile, obovoideum, compressum, biloculare, apice breviter bilobum, lobis obtusis sinu lato separatis, intus stigmatoso-papillosis. Ovula in quoque loculo solitaria, e basi anguli centralis adscendentia, (adjecto interdum ovulo altero minori mox abortiente?). Drupa depresso-globosa, a latere subcompressa et pedunculo paullulum obliquo insidens, carnoso; putamine crustaceo duro glabro lævi (bivalvi?) uniloculari, monospermo, (loculo altero ovarii constanter? abortivo). Semen erectum, umbilico lato affixum. Testa membranacea, basi prope umbilicum valde incrassata et indurata. Albumen nullum. Embryo subspiraliter contortuplicata; radicula longa, crassa, extremitate clavata, versus umbilicum tendens; cotyledones membranaceo-foliaceæ, penninerviæ, radicula flexuosa.

Ophiocaryon paradoxum, *Schomb.*

Arbor excelsa. Folia alterna, impari-pinnata, iis *Cupaniæ Vonaranæ* simillima. Foliola 3-6, alterna v. opposita, breviter et crasse petiolulata, oblongo-elliptica, breviter et obtuse acuminata, basi rotundata v. angustata, glabra, coriacea, supra nitida. Paniculæ ad apices ramorum subaxillares, foliis breviores, ramosæ, floribundæ, glabræ, ebracteolatæ, v. ad ramificationes bracteolis brevissimis latis vix conspicuis instructæ. Pedicelli brevissimi, alterni. Flores vix ¾ lin. longi. Sepala et petala inter se textura subsimilia, margine tenuia (alba?). Drupa magnitudine fructus Juglandis.

The male flowers are still wanting to complete the description. It will be rather a difficult task to procure them, as the Indians take notice only of trees under which they find the nuts lying, and which consequently have female or hermaphrodite flowers.

The fruit is decidedly the most remarkable production of this tree: it is the size of a walnut, the kernel very

strikingly resembles a snake, when the thin membrane which covers it, is removed. The embryo is spirally twisted, or rather coiled up, the radicle long and its extremity clavate tending towards the umbilicus, the foliaceous cotyledons are marked with curved veins, somewhat contorted and folded up between the radicle and the neck of the embryo.

A slight curvature is observable in the embryo of several *Sapindaceæ*, and in the section *Dodonæaceæ* it is even twisted; the cotyledons of that Order are generally large, but I am not aware that in any of the genera they are foliaceous as in *Ophiocaryon.*

In *Potamogeton*, *Zannichellia*, &c., we have a similar instance of a spiral and lengthened embryo among Monocotyledonous plants; and, among Dicotyledons, we find something analogous in *Humulus*, *Cistus*, *Bunias*, *Erucaria*, *Salsola*, &c.

The tree has been hitherto only discovered at the lower Essequibo, near the junction of the rivers Mazaruni and Cuyuni with the Essequibo; chiefly at the banks of the small rivers Ampa, Carrau and near Saxacalli. The Indians of the interior are perfectly unacquainted with the tree. Even at the Demerara river it is unknown, although it runs parallel with the Essequibo at a distance of fifteen to twenty the two main ridges of the Cordillera, which constitute its eastern and western boundaries. Of all the towns or villages it is perhaps the most recent, from the circumstance of the ancient city having been in 1797 destroyed by an earthquake, a catastrophe still fresh in the memory of the older inhabitants. The few that escaped established themselves in the present site, and the entire population, chiefly Indian, may probably amount to 10,000 souls. The climate is cool and remarkably dry, the soil barren in the extreme. By the aid of artificial irrigation, a few vegetables and fields of lucerne are cultivated; but the market is chiefly supplied from the mountains, the produce of the several farms, there situated, being transported on mules and "*llamas*."

On the 5th May, 1844, I set out on an expedition to Salinas, an Indian village on the western flank of Chimborazo, and was consequently obliged to cross the much frequented path called the "*Arenal*" and descend to Guaranda. Leaving Riobamba, the main road for the first two leagues is scarcely discernable from the loose-blowing sand that conceals the tract. There is a scanty vegetation of *Cactus*, three species, *Agave Americana*, and a few bushes of *Dodonæa viscosa* (No. 317). As we approach the base of Chimborazo, the face of the country improves considerably. Showers descend from the Cordillera. There is an abundant pasturage of native grasses, and Cerealia are successfully cultivated. Among the agricultural products peculiar to these regions are the "quinoa" and "oca," (*Chenopodium* and *Tropæolum*), two plants used, from time immemorial, by the Indian population. The *Tropæolum* produces its tubers at 12,000 feet, and the *Chenopodium* ripens its seeds at a scarcely inferior elevation.

I passed the night at the farm house of San Juan, a large estate better calculated for the rearing of cattle than for the production of grain; its elevation cannot be less than 11,000 feet. On the road side grew a large *Cactus* with round branches, and a thick trunk clothed with moss (*Tortula*). It is employed as a fence, and is I believe the hardiest plant of that numerous tribe, reaching a station elevated about 500 feet above this point; *Calceolaria ericoides* (No, 180) was particularly abundant. It produces a profusion of yellow blossoms arranged in the form of a spike, but very frequently lax; the leaves are totally different from any other known species, hence the specific name. The other plants were three species of *Solanum*, one of them a large shrub, a *Peperomia* and *Datura sanguinea*, the last named tree always in the neighbourhood of houses.

May 7.—This day's journey, which usually terminates in Guaranda, is peculiarly interesting to the botanical traveller from the variety of climate he traverses, giving rise to a diversity of vegetable forms. At a point named "La Chorrera," where the main road to Quito branches off, *Draba grandiflora* (No. 152) occurs in considerable abundance. It ranges between 12,500 and 13,500 feet. A little higher up is the "arenal," perhaps the loftiest road in the world, with the exception of that to Cuenca traced across the Asuay. Many curious plants vegetate on this elevated plain, but owing to the inconstancy of weather, and the great distance to an inhabited spot, I am obliged to make a hasty survey, trusting to some future opportunity to complete it. As the weather was unfavourable, I had barely sufficient time to

May, and corresponds to the wet season of the coast. The western ridge of the Andes, of which Chimborazo forms the loftiest summit, presents a barrier intercepting the clouds and condensing them in showers of rain, while the climate of the eastern side is characterized by the opposite extreme. Notwithstanding the bad weather, I added to my collection *Polylepis lanuginosa* (No. 204), which of all trees is perhaps that which grows at the greatest elevation on the globe. The trunk, nearly destitute of bark, is gnarled and twisted in the most fanciful manner, and the root penetrates deeply the rocky crevices, thus enabling the trees to resist the violent winds with which they are assailed during the period of the dry season. Between the limits of 1300 and 1400 feet they constitute a well defined zone characterized by the absence of all other trees. The more remarkable plants occurring in the same region are *Gentiana cernua*, (No. 184), *Calceolaria*, (No. 178), *Eryngium humile*, (No. 159), *Silene*, (No. 39), *Baccharis thyoides*, (No. 98), and *Lathyrus*, (No. 44). Lower down, these plants give place to the grasses, and at 1200 feet we again observe patches of forest; not of *Polylepis*, but of *Aristotelia Maqui* and *Columellia sericea*, (No. 58). There is not, as in the central Cordillera, a well defined zone of shrubs. They may be equally numerous, but they are intermingled with forest trees. There are no pines, and oaks are very rarely found. The plants that abound most are arborescent and shrubby *Compositæ*, No. 188, 245), *Rosaceæ*, (No. 223, 224, 225), *Melastomaceæ*, (No. 169, 230), *Scrophularineæ*, (No. 178, 180, 181, 182), and *Lorantheæ*, (No. 224). The same observation respecting shrubbery is applicable to the descent of the Cordillera towards the source of the Marañon with this peculiarity, that the lofty ridge of the eastern chain produces, in the greatest abundance and of the most luxuriant growth, a tall gramineous plant, (No. 92), impenetrable to man or horse, and consequently any investigation in that quarter is attended with serious difficulties.

The constant rain of the preceding months had rendered he road extremely bad. I had calculated on reaching Guaranda before sunset, but unfortunately the mule that carried my luggage was thrown down in a narrow pass, where it was found impracticable to extricate her without taking off the load. So much time was lost before this could be accomplished that I was compelled to pass the night in the open air, spreading over my bedding an indian-rubber poncho to exclude the rain.

We entered Guaranda next day about 10, and having eat nothing for the last twenty-four hours, joined to the fatigue of the previous day's journey, I felt little inclination to move about. Guaranda merits no particular notice. The houses are badly constructed and filthy, and the village, excepting on the Sundays, seems to be nearly deserted. The surrounding scenery is highly picturesque. Hills cultivated to the summit, and houses frequently perched on the brow of a precipice indicate marks of industry. The wealth of the province however consists in horses and mules, which are hired to transport articles of foreign manufacture to the capital.

The native flora of Guaranda is of an interesting description. One of the most showy plants is a *Passiflora* with a rich crimson blossom. There are several handsome *Salvias*, and no less than six *Calceolarias*. A tall shrub of the order *Acanthaceæ**, (No. 166), with large orange flowers and stiff holly-like leaves, grows on the sides of ravines.

We arrived at the estate of "El Sinchig," from which we enjoyed a magnificent view of the country we had just gone over, with the snowy summit of Chimborazo on the left. The house is built on an eminence, just on the verge of the cultivated district, and surrounded by a shrubbery of *Fuchsia triphylla* entwined with a *Loasa* (No. 156) having fine orange-coloured flowers. Leaving the farm-house, we enter a narrow pass with very steep hills on either side, clothed with trees of a distinct species of *Polylepis*, (No. 17), arborescent *Compositæ*, *Valerianæ*, and, in short, the same vegetation observable on Chimborazo. We ascend on the left hand side of the ravine, and pursuing a narrow path traced on its grassy summit, we arrive, after a couple of hours' riding, at the village of Salinas.

The salt springs have been the means of assembling a population on these lofty regions where the climate is too severe to be rendered available for the cultivation of the more hardy vegetables. The process for the extraction of salt is conducted in a manner I have not seen practised elsewhere. A piece of ground is selected, having a gentle declivity, and divided into different spaces of about 30 yards in length by 6 in breadth, each of which has its respective proprietor. When the weather is fair, and especially during sun-shine, the whole population, men and women, are busily employed in bathing the heated surface with a quantity of the salt water, which runs down and collects in a reservoir from which it is repeatedly carried up in pitchers to undergo the same operation. When the briny fluid has acquired a high degree of concentration it is transferred to the boiler, usually made of copper, where it is speedily evaporated. The residuum is immediately formed into cakes, weighing about a couple of pounds each. As might be expected, the salt is very deliquescent and bitter, from the presence of the muriates of lime and magnesia. The water recently drawn from the spring contains protoxide of iron held in solution by carbonic acid, and a quantity of sulphate of lime, all of which are separated during the first stage of the process, that of concentration. During the wet season, of course, no work can be done.

No trees were found on this region excepting two *Buddleas* (Nos. 181 & 182), in the precincts of the village loaded with blossoms of a deep saffron colour, a large shrub (No. 174), resembling a *Thalictrum* and used as a fence, *Cassia* (No. 214) and *Datura sanguinea*, which on the Andes appears to follow man wherever he chooses to establish himself. The nettle, of which there are two species, is another migratory plant, and will spring up wherever an attempt is made to cultivate the soil. I have frequently observed this plant on the elevated plains of the Andes, but always in circumscribed localities: a sure indication that such spots were at one time tenanted by man and his flocks.

The village is backed by a wall of perpendicular cliffs many hundred feet in height, the rock being of the kind distinguished by the term conglomerate. A constant disintegration is going forward, and wherever the water has undermined a portion of the stoney mass we have a beautiful vegetation of *Tropæolum* (No. 155), *Loasa* (No. 156), and a *Mutisia* with orange-coloured flowers. Two *Orchideæ* grow on the mural cliffs, one of them a *Stelis* with very succulent leaves; but on the elevated plains, the most abundant plants were *Plantago rigida* (No. 10), and a beautiful little scarlet Gentian

Urticeæ	2	Myriceæ	1
Gunneraceæ ? (No. 199)	1	Geraniaceæ	3
Oxalideæ	3	Tropeoleæ	1
Polygaleæ	3	Violaceæ	1
Passifloreæ	1	Caryophylleæ	4
Polygoneæ	2	Piperaceæ	2
Halorageæ	1	Ericeæ	4
Vaccinieæ	3	Lobeliaceæ	2
Plantagineæ	3	Valerianæ	4
Compositæ	29	Stellatæ	3
Loranthеæ	2	Asclepiadeæ	1
Gentianeæ	7	Columelliaceæ	1
Scrophularineæ	12	Rhinanthaceæ	3
Solaneæ	5	Labiatæ	5
Bromeliaceæ	2	Amaryllideæ	3
Irideæ	2	Orchideæ	5
Junceæ	2	Gramineæ	11
Cyperaceæ	3	Filices	14
Musci	13	Hepaticæ	3
Lichenes			

Monoc. 28. Dicot. 166 = 194

BOTANICAL INFORMATION.

Boissier. *Spanish Botany: Excursions round* Malaga, &c.

(*Continued from p.* 196).

The time had now arrived for me to quit Malaga and make an excursion on the sea-shore and mountains in the Province of Ronda. The season was peculiarly fitted for this tour, and it was my intention to devote a month to it, previous to visiting the high lands and lofty mountain chains of Grenada, where vegetation is much backwarder. For this object I purchased a strong mule, which should carry my plant-paper and the small quantity of luggage necessary for myself, such an animal being indispensable for a journey of the kind. It was thus only I should be enabled to stop where I liked upon the road and to penetrate into districts never visited by the carriers (*arrieros*). I engaged the services of a man from the environs of Velez, whose name was Antonio, a thorough specimen of the Andalusian peasant; he was always lively and talkative, singing his ballads as he went and in excellent spirits, except when I compelled him to go with me upon the mountains, which he held in most devout detestation.

We set off from Malaga at eleven in the forenoon, clad, like the people of the country, with a peaked *sombrero* on our heads, cartridge-box at the girdle and musket on the shoulder. This garb, which is always worn by travellers, whether townsfolk or peasantry, is remarkably convenient, allowing people to go about without exciting any curiosity; while the sight of a coat and beaver hat never fails to raise a commotion in every village, and sets the dogs barking, and inasmuch as it is considered to mark the wearer as an Englishman, it affords an unfavourable badge for attracting the attention of plunderers. After quitting the city, we traversed a monotonous part of the Vega lying between the sea on the right hand and a line of sandy hills on the left. The fields presented not the slightest shadow, and the deficiency of water causes perfect sterility in the dry years. The waters of the Guadaljora places in the fields, have a striking appearance and remind the traveller of the Campagna of Rome.

We had now reached a height, equal to that of the eastern extremity of the Sierra de Mijas, by which, all day long, our view of the sea had been shut out, and we passed at a small distance the country residence called *Retiro,* which the Malagueños vaunt too much to strangers, but where they find what is certainly very rare in their neighbourhood, shade and running streams. The country through which we now travelled was delightful and fertile; either farms, girded with *orange groves,* or forests of *olive trees,* among which the gentle breeze allayed the heat of noon and from whence the eye might catch distant prospects through the trembling leaves. This lovely valley did not continue long with us, and leaving it we ascended an uncultivated and vast plain which slopes southward from the Sierra. All this open space was dotted with species of *Cistus,* thorny shrubs, and here and there, a few clusters of stunted *Evergreen Oaks.* About mid-way, we came to a hut made of leaves, where four peasants from Alhaurin mounted guard; many plundering attacks, which lately occurred in this neighbourhood, having given rise to this precaution, and indeed it had been difficult for robbers to select a spot more favourable for their purposes, for they might every where lay ambushes among these wild thickets and escape pursuit by fleeing to the mountains. Though vegetation was somewhat monotonous, I still gathered some interesting plants, as *Cleonia Lusitanica, Stachys Italica, Thapsia villosa, Dianthus serrulatus* and the elegant *Linum suffruticosum,* which grew abundantly among the bushes, its corollas being successively pink, white, and yellow. After walking for about five Spanish leagues, we descended by an easy slope to Alhaurin, a perfect earthly paradise, full of *mulberry* and *orange trees,* and watered with numberless brooks. So fertile is the land by nature, that splendid harvests are ripened beneath the shade of these trees; and a naturalist need to have visited southern Spain, ere he can form an idea of the productive power of its soil, when blessed with a moderate degree of moisture. All was full of freshness and life here, while the heat of the sun had already scorched up the environs of Malaga. The hedges of *brambles* and of *Coriaria myrtifolia* were adorned, as in other parts of temperate Europe, with many delicate species of plants, as *Fumaria capreolata*, *Campanula Erinus*, *Geranium Robertianum* and G. *lucidum*, *Veronica Cymbalaria*, *Fedia Cornucopiæ*, *Centranthus Calcitrapa* and *Arenaria spathulata*. The village which lies embosomed in this ocean of lovely verdure does not disparage from the aspect of the country; for it is large and cleanly, many of the inhabitants of Malaga possessing villas in it, where they shun, during the height of summer, the scorching heat of the coast; in addition to several English families, who, coming originally only to spend the winter, have become so much attached to the place, as to settle finally in it. The public-house, or *Posada*, where I stopped, was however, in disagreeable contrast with the rest of the village, being filthy, inconvenient and infested with bugs; while to complete my annoyance, a party of gypsies, here called *Gitanos*, had taken up their abode in it, and being the roughest and rudest people on earth, they spent the whole night in bawling, shouting and quarrelling.

The next day I went to visit the springs, to which this district crevices of calcareous, stony and ferruginous coloured earth, lying at the foot of a wall of rocks, by which the uniform slope of the Sierra is intersected for half a league; it trickles onward between banks, shaded with noble *Poplars*, and where rustic benches have been placed for the public accommodation. I feel quite incompetent to describe the beauty of the view which I beheld that evening at sunset. A little below was the village encircled with orange-groves, farther off the forests of olive, then the whole hollow of the vale and opposite me, in the distance, the imposing and massive *Sierra de la Nieve*, already bathed in the clear twilight peculiar to a southern sky.

My friend Hoenselaer had strongly urged me to climb the *Sierra de Mijas*, where he promised me a rich harvest, spite of its apparent sterility. To reach this mountain, I retraced a part of the Malaga road, and quitting it to the left hand, soon reached a beautiful *nascimiento*, whose abundant stream turned several mills. The argillaceous soil around the spring was decked with those delicate *Helianthemums*, of which the blossoms only expand at the earliest morning hour and drop away as soon as the sun is fairly risen; these were *H. Niloticum*, *intermedium*, *salicifolium* and *Ægyptiacum*, growing along with *Micropus supinus*, *M. bombacynus* and *Evax pygmæa*. On arriving at the foot of the wall of rock, mentioned above, I was delighted to find a vast number of lovely plants that I have never seen before, flourishing beautifully in this moist spot, with a north exposure. There were *Herniaria polygonoides*, the fragile and delicate *Linaria villosa*, its leaves covered with a gummy and fragrant exudation, and then came *Saxifraga globulifera* and *Campanula velutina*, gracing the angular and rough fractures of the stones with tufts of white and blue blossoms. Wherever the rock formed hollows and caverns, might be seen enormous tufts of *Fumaria corymbosa*, a plant which seems to shun the outward air and of which the peduncles may be observed lengthening and stretching in every direction after the flowers are past, seeking to deposit its seeds in the fissures. I also gathered there

Ephedra altissima (Desf.) and, Queen of all, *Anthyllis podocephala*, a lovely shrub with silky leaves, and crowned with clusters of golden yellow flowers. The distance I had yet to go in the day forbade my doing more than take a superficial glance at these treasures, which the proximity of the village would allow me to revisit the following day, so I regretfully forsook these rocks and pursued my way among slopes, covered with species of *Cistus*, *Rosemary* and *Kermes Oaks*. We continued ascending by a ravine, called *La Cañada del Infierno;* it was now dry and the bottom was covered with a fine sand, among which grew abundance of *Alyssum serpyllifolium*, *Atlanticum*, and *Mercurialis tomentosa;* this sand is found, here and there, all over the mountain being formed by the decomposition of the white calcareous chrystal of which the mountain itself consists. I gathered in succession several species peculiar to the mountainous region, viz. *Macrochloa arenarria*, a gigantic kind of grass, which bears, on a stalk five or six feet long, a large golden spike, *Armeria alloides*, with white blossoms, *Senecio arachnoideus* and *minutus*, *Echium albicans*, a magnificent plant, whose aspect recalls the individuals of the same genus which are peculiar to the Canary Islands, and *Reseda undata*, called by the shepherds, in allusion to its long straight round flower-spike, "*Hopo de Horra*," or *Fox's tail.*

During this excursion I enjoyed, to the full, the delights of

From the summit, 3520 feet above the sea, we gained a noble panoramic view of the surrounding country. Malaga and its lighthouse might be descried towards the east, and beyond that city the mountains of Grenada; on the opposite side stretched the mountains of Ronda and the distant rock of Gibraltar, its point wrapped in mist. But the spot which chiefly fascinated my attention and from which I could scarcely take my eyes, was the continent of Africa, which I beheld for the first time. I could plainly discern the forky summit that rises above Ceuta; and fronting me, several higher mountains, not however so clearly defined, because of the gradual widening of the strait. I have since been able to perceive the shore of Africa from Malaga even; but this can only be done when the weather is very clear and the gazer has the advantage of rather an elevated situation, such as is afforded by the Castle of Gibralfaro.

The Sierra de Mijas, at whose western extremity I was posted, runs from West to East as far as Torremolinos, one league distant from Malaga. Its summits are rounded and the sides furrowed by numerous ravines, consequent on its sandy formation. Towards the south the slope is more rapid than on the north, and between it and the sea lies a country regularly intersected with undulating hills and little vallies through which passes the road, usually travelled, from Malaga to Gibraltar, past the Castle of Fuengirola. I found the high parts of the mountains covered with shrubs, many of them similar to those of the plains, the elevation not being sufficient to produce, in this latitude, a total change of vegetation. *Ulex australis* prevailed, mingled with *Rosemary, Juniperus Oxycedrus, Cistus incanus, salvifolius, Monspeliensis* and *atriplicifolius*. A *Helianthemum*, with white flowers and downy foliage, formed elegant little bushes; and, combined with most of the plants which I have already enumerated, as belonging to the subalpine region, I noticed *Borkhausia albida, Valeriana tuberosa, Carex gynobasis, Erysimum canescens, Orchis anthropophora,* and *Asphodelus fistulosus*. In the clefts of rock which terminate the mountain on the south side, I gathered the beautiful *Linaria tristis,* with flowers of a blackish-purple hue, *Calendula suffruticosa, Saxifraga globulifera* and an umbelliferous plant, which grows upon Mount Atlas, *Bunium glaberrimum;* it was not in flower, but I recognized it by the peculiar form of its leaves.

The approach of evening could alone induce me to tear myself away from this rich harvest; I descended to the Cross of Mendoza and thence to Alhaurin by a rapid slope which leads straight to the *Nascimiento,* and along which, in spite of its aridity, I gathered several rare species, as *Matthiola varia, Brassica humilis,* a new kind of *Herniaria,* a curious velvetty-leaved variety of *Ranunculus gramineus* and a lovely *Iris,* near *Xiphium,* its purple blossoms spotted with yellow. The Cross of Mendoza is a shoulder of the mountain where stand several ancient and rudely carved wooden crosses; it is a much venerated place of pilgrimage in the country and my *posadera* (landlady) assured me that she had often walked thither (*los pies descalzos*) barefoot, to obtain the exemption of her son from the conscription. Her devotion had succeeded, "Blessed be the Holy Virgin," said she, "my son is now married and an honest man like his father." This was equivocal praise, for rarely have I met with a greater rogue than the landlord of that inn. Every body knows that the ing and drying my plants, and then paid another and last visit to the shelf of rocks, which had already afforded me such interest and delight.

(*To be continued.*)

Notes of a Botanical Visit to MADRAS, COIMBATORE, *and the* NEELGHERRY MOUNTAINS; *by* G. GARDNER, ESQ. F.L.S., *Superintendent of the Royal Botanic Gardens, Ceylon.*

(*In a letter to the Editor.*)

When Dr. Wight visited Ceylon in 1836, he undertook, at the suggestion of the then Governor, to publish a new edition of Moon's Catalogue of Ceylon plants, and for that purpose all the collections which had been accumulating at the Botanical Garden from the time of Mr. Moon, were sent to him. Several circumstances contributed to prevent his accomplishing this task, among which may be mentioned the fact, that but few of the plants named in the catalogue were found in the collection, and, of those which did exist, the greater part were in such bad condition as to be almost indeterminable. On my arrival in Ceylon, Dr. Wight wrote to say that the whole of the specimens would be returned, at the same time kindly offering, provided the government would allow me to visit him, to assist in comparing the Ceylon specimens with his own rich Indian herbarium, with the view to having them correctly determined. This was an offer not to be neglected, as it would save me the very laborious undertaking of ascertaining their names by books alone; and on laying the matter before His Excellency the Governor, he, with that liberality which he has uniformly extended towards the Gardens and the investigation of the Botany of the Island since my arrival, at once granted me leave for such a period as might be found necessary to accomplish the object in view.

On the first of November of last year (1844) I started from Kandy, with the intention of taking a passage to

Madras in the steamer 'Hindostan,' which was expected to call at Galle about the eighth. I was, however, prevented from accomplishing this plan by a very untoward circumstance. Being unable to obtain a seat in either of the two coaches which run between Colombo and Kandy, I was obliged, from my slower mode of travelling, to sleep at night at the half-way 'Rest House,' which is situated in one of the most unhealthy places in the island, and there imbibed the seeds of a jungle fever, which three days afterwards laid me up, at little more than an hour's notice. It was fortunate for me that, anticipating what was about to occur, I secured the immediate advice of the son of an old friend of yours, the highly esteemed Irish naturalist, Mr. Templeton. He is a Surgeon in the Army, who has been several years in Ceylon, and, you will be glad to learn, inherits his father's love for the study of Natural History. At present he is engaged in working up materials for a 'Fauna' of Ceylon.

Notwithstanding the active treatment adopted, it was ten days before I was able to stir out, and in the meantime the steamer had sailed. As another was expected about the end of the month, I went on to Galle to await her arrival; but owing to detentions it was not till the end of December that she reached Ceylon. During my stay in the appearance of Madras, than in any of the towns of Ceylon. The turbaned natives, their loose flowing dresses, so well suited to a hot climate, the mosques with lofty minarets, and the flat-roofed houses, on the tops of which parties of wild monkeys are not unfrequently to be seen gambolling, recall most vividly the pictures of Eastern scenes, which every boy has read with delight in the fascinating tales of the 'Arabian Nights.' That part of the suburbs where the greater number of Europeans reside, looks like one vast garden, each house being surrounded by a large piece of ground laid out with trees and shrubs. The roads which intersect them are wide, well kept, and planted on either side with a row of trees, the commonest of which are the beautiful golden-flowered *Thespesia*, the ash-like *Odina Wodier*, and different species of Wild Fig, the branches of the latter fantastically adorned with pendent masses of horse-tail-like roots. The hedges which surround the enclosures are either formed of *Opuntias*, *Inga dulcis*, *Lawsonia inermis*, *Euphorbia Tirucalli*, or a small species of *Bamboo*, among which twine innumerable *Convolvulaceæ*, *Asclepiadeæ*, *Leguminosæ*, and *Cucurbitaceæ*. I visited the garden belonging to the Horticultural Society, which is of course principally intended as an experimental one for Agricultural and Horticultural objects. The botanical collection is not large, but contains several plants not yet introduced to Ceylon, some of which I hope to obtain by exchange. It suffers from two almost irremediable evils—a bad soil, and impossibility of extension.

Coimbatore, where Dr. Wight at present resides, is about 320 miles distant from Madras; in a south-westerly direction, and to save time I determined to travel post, which, however, is somewhat different from the so called mode in England. In place of a carriage, I had to purchase a palankeen, and instead of horses, to have relays of bearers placed at different stations along the road. To get the latter part of this business arranged, required eight days' notice to the Post-Master-General, and the deposit of a sum of money sufficient to pay the bearers, which for the distance I had to travel amounted to about £20. The whole journey was accomplished in less than five days, from which you may judge that I had not much time for sleeping, for to a 'Griffin', like myself, such a luxury is not to be enjoyed in a palankeen when on the way. To those who can take time, India is quite a delightful country to travel in, compared with South America. Along the whole of the principal roads, public 'Bungalows,' or Rest Houses, have been erected at the distance of every ten or twelve miles, for the use of travellers, substantially furnished with chairs, tables, and bedsteads, and generally entrusted to the care of an old Sepoy. Travellers are obliged to carry their bedding and provisions, for of the latter little is to be had at these places, except milk, eggs, and the requisites for a dish of curry and rice; but even these simple viands cannot always be obtained.

During the three first days I encountered very heavy rains, and in consequence found it difficult to cross some of the rivers, particularly one at Arcot, the bed of which is more than half a mile broad, with a quick-sand too rapid for making collections, which I did not greatly regret, for the ground has been often gone over by Dr. Wight.

Two days before reaching Coimbatore, I had a smart fit of ague, which returned on the day after my arrival with increased force, and prostrated me so much that I was confined to bed for nearly a week. I received a most hearty welcome from Dr. Wight, who was quite delighted to meet with a brother Botanist. He was on the Neelgherries when I informed him from Madras that I was near at hand, and he only reached Coimbatore a few hours before me. For the last three years he has been employed in superintending a large Cotton Farm, established here by order of the Court of Directors of the East India Company; and conducted on the North American plan of cultivation; American planters being engaged for that purpose. It has not, however, answered so well as was anticipated, for the soil is too light to admit of more than two crops being taken off the same plantation in succession, and even then the second crop is decidedly inferior to the first. This is with regard to American Cotton. In America the case is very different, for there the same ground is kept under Cotton cultivation for years in succession; and it is the same in the northern districts of Brazil, such as Pernambuco and Maranham. Coimbatore is about 25 miles distant from the foot of the Neelgherry range, and the country round it is flat. There is not much depth of soil, for at one or two feet below the surface there exists in some places a very thick stratum of botryoidal limestone, and in others disintegrating gneiss and granite.

The Ceylon collections were more extensive than I anticipated, but by far the greater part are in a very bad state of preservation. Moon seems to have been a most indefatigable collector, for among his plants we found most of the species detected by subsequent Superintendents of the Garden, and other collectors. During the month of January, Dr. Wight and I worked very constantly at them, first grouping them into their natural Orders and Genera, and then comparing them, species by species, with those in the Doctor's Herbarium. By this means, together with the use of his valuable and extensive botanical library, we were enabled to ascertain which are new species, and to name those that had already been described. From the materials in this collection, and in that made by the accomplished Mrs. Col. Walker, which you so kindly presented me with previous to my departure from England, together with what I have collected since my arrival, and still hope to accumulate, I trust to be able, in the course of a very few years, to prepare for publication a Flora of the island, worthy of the richness and beauty of its vegetation, and of the encouragement afforded me both by the home and local government. This, however, as you are well able to judge, will be a work of no little labour, as it must contain descriptions of from four to five thousand species, being considerably more than half of all the plants defined by Linnæus in the last edition of his 'Species Plantarum.'

In the course of our evening walks or drives, I always contrived to pick up a few specimens of those plants which are indigenous to the plains of India, or at least to the Peninsula. Several of them are of great botanical subject, and sent it to the Calcutta Journal of Natural History for publication. The following is a short extract —"The principal reason, it appears, why those Botanists who have written on this genus have not been led to refer it to its proper position in the natural system, is, that too much importance was attached to its being polypetalous. Notwithstanding this structure, we believe its affinities lean less towards the polypetalous than the monopetalous division of plants; and in the latter we are inclined to place it, as a distinct Order between *Oleaceæ* and *Jasminaceæ*. That it is nearly related to these Orders, more nearly, indeed, than to any others in the system, our analysis clearly shows; but to neither can it be referred, from the almost equal affinity it bears to each. Thus it corresponds with *Oleaceæ* in the structure of the flower, differing principally in having 4, not 2, stamens. If we reflect, however, that in its floral envelopes, *Oleaceæ* is tetramerous, it is to be expected that truly Oleaceous genera may yet be discovered having four stamens. The diœcious character of *Azima* is met with in more than one species of *Olea*; and free petals exist in *Linociera*. *Azima* is essentially distinguished from *Oleaceæ* by its erect, not pendulous, ovules and exalbuminous seed. On the contrary, it agrees with *Jasminaceæ* in the nature of its ovary and fruit, but not in the details of its floral envelopes. From *Oleaceæ* it differs in habit, while it coincides with that of the scandent species of *Jasminum*."

During my visit to Coimbatore I made myself better acquainted than formerly with the structure of the fruit of the Natural Order *Cucurbitaceæ*, a subject to which, as you are aware, Dr. Wight has paid much attention. Perhaps the few following observations connected with it may not be unacceptable.

Most writers on the subject describe the fruit as one-celled, with parietal placentæ. The definition given by Jussieu in his "Genera Plantarum" is more complex:— "Fructus inferus baccatus, cortice sæpius solido, unilocularis, mono-vel polyspermus, aut multi-locularis polyspermus, receptaculis seminiferis lateralibus seu parieti affixis." Lindley says: "Fruit fleshy, more or less succulent, crowned by the scar of the calyx, 1-celled, with three parietal placentæ;" and in his 'School Botany' has given a diagram illustrative of this structure. Arnott defines a *Pepo* to be "a fleshy inferior fruit, either indehiscent or bursting irregularly, and consisting of about three carpels, each divided into two cells by its placentiferous margin being so introflexed as to reach the dorsal suture." Endlicher's view is still different:—"Ovarium inferum, rarissime uniloculare, ovulo unico ex apice loculi pendulo, plerumque e carpidiis tribus vel quinque compositum, carpidiis usque ad axim idealem involutis, iterumque revolutum porrectis, marginibus ovaliferis parietem attingentibus sex- vel decem-loculare, septis alternis sterilibus, alternis angulo parietali utrinque ovuliferis sæpissime septis primariis e carpidiorum marginibus introflexis obsoletis, triquinqueloculare vel secundariis e carpidiorum marginibus revolutis pariter obliteratis uniloculare, placentis parietalibus tribus vel quinque geminatis." Such a structure as this may be consistent with theory, but assuredly not with fact.

Seringe, in his "Mémoire sur la famille des Cucurbitacées," versement dans son fruit, la gousse pendant sa maturation se tourne sur la base; mais comment le supposer dans une Courge, dont les carpelles sont entourées du torus et du calyce? Cette position des carpelles existe cependant dans cette singulière famille, et me paroît tellement incompréhensible que j'ai eu de la peine à me décider à l'annoncer. J'ai fait des coupes de fruits très-jeunes, demi-mûrs et mûrs de bien des *Cucurbitacées*, et j'ai toujours trouvé la même position des carpelles." De Candolle adopts this view in his 'Prodromus,' as may be learned from the following passage: —"Carpella 3 vel 5, carnosa (abortu? solitaria) toro et calyce involuta, peponidem formantia, nervo medio carpellorum centrali et margine seminifero externo."

Neither Seringe nor De Candolle has, however, so clearly or satisfactorily demonstrated this very singular structure, as has Dr. Wight, in his paper originally published in the 'Madras Journal of Science.' "In a *Pepo*," says Dr. Wight, "the normal position of the midrib of the carpellary leaf is reversed, that is, placed in the axil, and the placentiferous margins towards the circumference. That such is actually the case requires no argument to prove; we have only to cut the ovary of any true cucurbitaceous plant, to be made sensible, at a glance, that it is so." To test this theory I examined the young ovaries of several species of the Order, and in all of them found convincing evidence of its truth. In *Coccinia Indica* the structure is most beautifully exhibited, for there the revolute margins of the carpels which form the dissepiments do not adhere, and when a longitudinal cut is made in a transverse slice of the ovary, the three carpels readily separate from each other, the inner angle exhibiting a dense point of vascular tissue, which evidently is the midrib. When the carpels are thus separated, and allowed to retain their adhesion to the adherent tube of the calyx, the placentæ are distinctly seen to be formed from the slightly involute margins of the revolute carpellary leaf. In the species of *Bryonia* with two cells, the midribs of the carpels are still in the axis of the fruit, the partition being formed by the laminæ, and the placentæ by their very slightly revolute margins. In this case, as indeed in all the species I have examined, the external walls of the cells are constituted alone by the tube of the calyx. The only difference then between this and the usual structure of a fruit is, that in the one case, the carpellary leaves are *involute*, in the other *revolute*. The few words of De Candolle express the structure of a *Pepo* admirably, while the verbose character of Endlicher is quite unintelligible. Dr. Wight informs me that the late lamented Mr. Griffith was most determinedly opposed to the *revolute* theory.*

The close confinement to which I subjected myself during the month of January in arranging the Ceylon collections, together with several returns of ague, so much injured my general health, that at the recommendation of the civil medical attendant here, who is married to a daughter of your Cape correspondent, Baron Ludwig, I determined to make a run up to the Sanitorium on the Neelgherries a week or two to recruit, and check, if possible, the periodical attacks of my fever. Dr. Wight's family being on the mountains, he kindly consented to accompany me.

Sometimes *Amyris Gileadensis* is used, and while it very much resembles the hawthorn of Europe, quite equals it as a fence. About Coimbatore a species of *Viscum* grows very commonly on the two first kinds of *Euphorbia*, a fact at variance with the assertion of De Candolle, (*Prodr.* 4, p. 277), that the *Loranthaceæ* "vegetant super omnes fere arbores dicotyledoneas, *lactiferis exceptis*." In many places by the sides of the road, splendid specimens of the Tamarind and Wild Figs may be seen. The most common of the latter is the *Ficus Benjamina*, very remarkable for the profusion of roots which it throws down from its branches. These, when they reach the ground, became secondary stems, as in the true Banyan tree. Those who wish additional facts to prove that the wood of Exogenous trees is formed by bud roots, have only to look at one of these trees to be fully convinced of the truth of this beautiful doctrine. The main stem of some of them, indeed I may say of all, does not form one solid mass, as usually occurs in other trees, but is a congeries of thick branching roots, which come down from the lower ends of the large branches, surround the original shoot or stem, and overlay each other in such an open reticulated manner, that daylight can often be seen through a trunk several feet in diameter. It is also curious to observe that the long horizontal main branches of these trees have not the conical shape, or at least not so much, as those of other trees. What is the cause of this? The explanation is very simple. The roots which are sent down from the buds between the bark and the previously formed wood, in place of reaching the lower part of the branch, are thrown out along the course of it in masses, which, as I have before stated, resemble enormous horse-tails, and hence the necessity which the branches of such trees have for the supports which are formed by these roots when they reach the ground. Instances have been known of the main trunk of these trees, although totally destroyed, yet continuing to live, its functions being performed, and the whole mass supported, by the supernumerary stems formed of the tender rootlets given out by the branches.

In the course of our drive many kinds of plants occurred, which I had not before met with in a wild state. The most curious were the Stapelia-like *Caralluma fimbriata*, and *Bucerosia umbellata*, both inhabiting dry arid stony fields, along with *Coleus aromaticus*. In the same localities *Cassia auriculata* and *Dodonæa Burmanniana* grow in the greatest profusion.

Next morning, a ride of five miles brought us to the foot of the Neelgherries, which rise very suddenly out of the plains. At this point the country is well wooded, and among the large trees, *Strychnos Nux vomica* and the superb *Butea frondosa* appear most conspicuous, the former bearing abundance of large orange-coloured fruit, and the latter loaded with large panicles of bright red flowers. Here we collected specimens of *Cardiospermum canescens*, *Glycosmis arborea*, *Getonia floribunda*, and a magnificent *Ipomæa* with very large pale rose-coloured flowers, the tube of a much darker shade. It climbs to the tops of the highest trees of the forest, and thence hangs down in rich festoons. Further on, the Jack-tree is common, and *Sizygium Jambolana*, the latter a large and very handsome *paniculata* and *dioica*, both forming large trees. Here also are found two species of *Kydia*, *Microchlæna* 5-*angulare*, several *Lauraceæ*, *Urticaceæ*, *Celtis orientalis*, *Semecarpus Anacardium*, a *Gnidia*, two species of *Jasminum*, a *Gnetum*, forming a large tree, *Mæsa Indica*, a *Begonia*, *Aristolochia acuminata*, a *Mappa*, and several other Euphorbiaceous trees, *Clematis Goveniana*, a beautiful climber, *Mucuna prurita*, *Phœnix pedunculata*, *Arenga Wightii*, Griffith, *Monosis Wightiana*, an undescribed *Hedera*, and the splendid *Mesua speciosa*, of which a fine figure will appear in the next part of Dr. Wight's 'Icones.'

Shortly before reaching Coonoor, about ten miles from Ootacamund, and nearly 6000 feet above the level of the sea, the appearance of the hills becomes very much changed in the nature of the vegetation; the vast forests disappear, leaving large open campos thinly covered with stunted trees and shrubs; but still the deep ravines and hollows are well wooded. In one of these ravines by the road side the lovely Andromeda-like *Agapetes arborea* was beautifully in flower; on rocky places *Plectranthus mollis*, *Anisochilus dysophylloides* and *Crotalaria scabrella*; and in bushy hilly spots *Indigofera pulchella*, *Desmodium rufescens*, *Osbeckia Wightiana* and *Wendlandia Notoniana*. At Coonoor we halted to breakfast at the public bungalow, and afterwards walked out a little in the neighbourhood. Here grew the pretty erect yellow-flowered *Jasminum aureum*, *Potentilla Leschenaultiana*, *Rhododendron roseum*, *Microtropis ovalifolia*, *Symplocos spicata*, &c. Shortly after leaving Coonoor we collected *Exacum Wightianum*, *Gaultheria Leschenaulti*, which is the same as that figured in your "Icones Plantarum" under the name of *Andromeda Katagherensis*.

When a European Botanist first arrives in a tropical country, his mind becomes so filled with its gorgeous productions, as almost to forget the less luxuriant vegetation of his native land. But when time has familiarized the former, the sight of plants analogous to the latter, is sure to awaken many delightful remembrances of past times. This I found to be the case during my ride from Coonoor to Ootacamund, where the number of European forms mingling with intertropical ones is very great indeed. Among these may be mentioned *Rosa Leschenaultiana*, a shrub with long straggling branches, bearing clusters of large white flowers; *Berberis tinctoria*, which when in flower very much resembles the common English Barberry, but the berries instead of being red are black; two species of *Rubus*, *R. Wallichianus*, bearing yellow fruit, and *R. lasiocarpus*, a *Mentha*, *Juncus glaucus*, *Lonicera Leschenaultii*, resembling very much in general appearance the Honeysuckle, and *Clematis Wightiana*, &c. Some of the open hilly country here is cultivated by a very industrious race of natives, called Budagars, who inhabit the mountains. Besides some small grain peculiar to the country, they cultivate barley, wheat, onions, garlic, mustard, opium and potatos, all thriving well in favourable seasons. About four miles from Ootacamund we passed Kaitie, a residence belonging to Lord Elphinstone, and about a mile further on we obtained the first view of the Sanatorium itself.

Ootacamund began to be visited by Europeans about twenty years ago, and now contains, besides the bazaar or native village, more than one hundred European residences, the hills that regular woods exist. These at a distance appear to be composed of very small trees, but on nearer approach, we are soon undeceived, as many of them attain a very great size.

Dr. Wight's house is very pleasantly situated, and being considerably elevated above the plain, commands a fine view: except where a clearing has been made for a flower and kitchen garden, it is surrounded by native jungle. Some of the trees are highly ornamental, as you may judge from the following list of what occur in the immediate vicinity. The first enumerated must be the splendid *Rhododendron roseum*, not only from its being the Queen of Beauty, but one of the commonest. Only figure to yourself a plant of the *Rhododendron arboreum*, now so commonly cultivated in the green-houses of England, becoming a densely branched tree from 30 to 40 feet high, and then you will gain some idea of the appearance of the many thousands which adorn the hills and valleys of the Neelgherries. It is never found below an elevation of 6000 feet, and reaches to the highest summit of the mountains, or nearly 8500 feet above the level of the sea. On exposed hilly places, it becomes very gnarled and stunted, and then much resembles some of the beautiful forms now cultivated in the open air with you. The next in beauty is the *Agapetes arborea*, and a new species which will shortly be published by Dr. Wight under the name of *A. rotundifolia*. Then come *Cleyera gymnanthera*, *Turpinia Nepalensis*, *Eugenia densiflora*, *Sapota elengoides*, *Ilex Wightiana*, and *Ilex denticulata*, both the latter are immense trees, often attaining the height of from 60 to 90 feet, with fine umbrageous heads; *Gordonia obtusa*, *Cinnamomum ovalifolium*, and *Myrsine capitellata*. Besides these there are others of smaller size, such as *Stemonurus fœtidus*, *Berberis Leschenaultii*, and *tinctoria*, *Viburnum Wightianum* and *hebanthum*, and *Pavetta breviflora*. The *Berberis Leschenaultii* is a very handsome plant indeed, belonging to the *Mahonia* division of the genus.

It would be a most ornamental tree for an English lawn, from its size, large dark green leaves, and dense fascicles of long spikes of yellow flowers and blue berries, if hardy enough, which, unfortunately, is not the case, to stand the climate of England. The lower jungle in the same situation consists of several species of shrubby *Compositæ*, three kinds of *Rubus*, a new *Coffea* (*C. alpina*, R.W.) with highly odoriferous flowers, two or three kinds of *Leucas*, *Osyris Wightiana*, *Hedyotis stylosa*, and *Lawsoniæ*, *Mephitidia venulosa*, (*Sautia venulosa* W. & A.), *Jasminum aureum*, *Osbeckia Gardneriana*, a new species, one of the most beautiful of the Peninsular *Melastomaceæ*; *Lonicera ligustrina*, a very pretty plant, used on the hills for garden hedges, much resembling those of Privet, and a very fine *Euphorbiaceous* shrub constituting a new genus nearly allied to *Buxus*.

In the flower garden I found many common English plants growing most luxuriantly, such as Wallflowers, Larkspurs, Scabiosas, Lupines, Roses, Pinks, Carnations, Dahlias, and several beautiful kinds of Pelargoniums. So well does the climate suit the latter, that in many places they are apparently wild, and this also is the case with an *Iris*, *Œnothera biennis*, *Melianthus major*, *Capsella Bursa Pastoris*, *Achillea Ptarmica*, &c. All European vegetables flourish, but the only fruit tree which bears well is the Peach. Strawberries

Heights of the Neelgherries, by Barometer.

Dodabetta, highest summit	8429 feet.
Oootacamund	7197 „
Kotagherry	6407 „
Dimhutty	6166 „

Temperature.

Dimhutty		64° 1
Kotagherry		63° 4
Ootacamund		60° 8
Dodabetta		56° 6
Ootacamund	(daily range)	8° 7
„	(monthly range)	17° 4
„	(annual range)	38°
„	(rain annually)	63.808 inches.

State of the Weather for one year.

Dry days	260
Partial rain	88
Continued rain	14
Unrecorded	3 = 365.
Calm	214
Light winds	130
Strong winds	21 = 365.
Frost	28 nights.
Partial fogs	10 days.
Continued fogs	1 day.

Prevalent winds from N. to W.

(*To be continued*).

Animadversiones in PIPERACEAS HERBARII HOOKERIANI, *auctore* DR. F. A. GUIL. MIQUEL.

Cum in ditissimo Herbario Hookeriano haud parcam copiam Piperacearum novarum vel adhuc dubiarum invenissem, quibus difficilis hujus Ordinis historia varia ratione illustratur, brevem earum enumerationem jam nunc benigno botanicorum judicio submittere haud inutile mihi videbatur. Reperi enim in splendida hac collectione plura, quæ antea frustra quæsiveram, magnam copiam *Piperacearum Peruvianarum* ab indefessis *Mathews* et *Jameson* lectarum, vel ex *Ruizii* et *Pavoni* herbariis acquisitarum, *Garderianas Brasilienses* aliasque ex variis *Novi Orbis plagis* a *D. D. Guilding, de Schach, Tweedie, Purdie, Macfadyen, Hartweg, Linden, Parker, Hostmann, Nicholson, Barclay,* rel. detectas, uberrimam messem specierum quas *Archipelagus Oceani pacifici* gignit, a *Frasero, Cunninghamis, Colenso, Edgerley, Darwin, Barclay* rel. communicatas, e *coloniis Anglo-indicis*, præter *Wallichianas* olim jam a me examinatas, plures novas a cl. *Griffith* lectas, porro *Ceylanenses Walkeri, Javanas Zollingeri* cæt., atque ex *ora occidentali Africæ* tres species, olim imperfectissime notas, in doctrina phytogeographica perquam memorabiles, ab infelici *Vogelio* repertas. Speciebus in *acuminata*; tenerior, foliis minoribus ovato-cordatis attenuato-acuminatis.—Ex Chinchao Peruviæ a. 1795. *Ruiz, et Pav.*

ACROCARPIDIUM, *Miq.*

1. *Acrocarpidium nummularifolium, Miq. l. c. p.* 52, *var.* foliis fere omnibus apice emarginatis pæne obcordatis, hinc *A. cordifolio* proximum. — In Surinam (*Hostmann*, n. 117.)
2. A. *Sellovianum, l. c. p.* 55.; forma *pilosior;* ramis junioribus petiolisque pilis longioribus densius obtectis, foliis omnibus fere reniformibus, setis multi articulatis.—In humidis umbrosis El Equador (*Jameson.*)
3. A. *cordifolium, l. c. p.* 56.—Amenta 4-5 cent. longa, pedunculi 1 cent.—In Jamaica.

A. *cordifolium,* forma *minor;* foliis obovatis vel subrotundis emarginatis tenuiter trinerviis puberulis ciliatisque, sensim glabratis.—*Crescit* super ligna vetusta in Jamaica, n. 167. (*Purdie*).

Folia ½-1½ cent. longa; petioli 5-8 mm. Amenta 1-2 cent. longa, in ramulis solitaria terminalia, filiformia, recta, pedunculis 5 mm. longis sustenta. Flores remotiusculi demum valde dissiti. Bracteæ orbiculatæ peltatim subsessiles. Ovarium ellipticum apice stigmatiferum. Stamina 2, filamentis brevibus.

4. A.? *Guayaquilense;* repens, ramosum, carnoso-succulentum, adultum glabrum, junius in caule foliisque præsertim subtus longe pilosum, foliis alternis petiolatis paullo supra basin peltatis ovato-rhombeove-circularibus crassis, subtus convexis uninerviis, amentis solitariis innovatione lateralibus pedunculatis filiformibus, demum subremotifloris.

Crescit in Prov. Guayaquil in truncis arborum in ins. fluvii Pante. (*Jameson*).

Species foliorum indola distinctissima, sed ob baccas incognitas nondum certa generis civis. Planta adulta tota glabrescit, in junioribus autem ramulis et præsertim in pagina inf. foliorum pili sparsi longi observantur. Petioli 2-5 mm. longi. Folia ½-1½ cent., raro perfecta orbicularia, plerumque aliquid latiora quam longa,vel et ad subovatam aut rhombeam formam tendentia. Pedunculi 1-1½ cent. longi; amenta 5-6 cent. primum densiflora, post florescentiam autem flores sunt remotiores. Bracteæ orbiculares pedicellato-peltatæ. Stamina 2. Ovarium ellipticum apice stigmatiferum.

5. A. *repens, l. c. p.* 57. forma *minor.* Caule repente petiolisque dense puberulis, foliis lato-ovato-rotundatis, basi truncatis (hinc semiorbicularibus) 5-nerviis (8-10 mm. long.) utrinque præsertim marginibus tenere puberulis. *Crescit* ad Pozuzo (*Ruiz, et Pav. a.* 1796).

6. A. *Guildingianum.* (Peperomia reniformis, *Hook. Fl. Exot. Tab.* 164. Piper Guildingianum, *Spr.*) Succulentum repens, ramis erectis petiolis pedunculisque hirtellis, foliis alternis longiuscule petiolatis carnosis punctatis, supra puberulis et ciliatis, subtus subglabratis, reniformibus vel lato-rotundato-triangularibus, basi subcordatis vel plerumque truncatis, quinquenerviis, amentis solitariis axillaribus vel lateralibus (ramulo unibracteato laterali insertis) longe pedunculatis brevibus, ovario elliptico rostrato antice stigmatifero, baccis obliquis cylindricis pedicellatis.

Crescit in planitie ad Quito, (*Hall*, n. 54), in mont. Pichincha, (*Jameson*, n. 62).

A. *repenti* et A. *scandenti* affine, sed statura gracili, glabritie et amentorum dispositione diversum.—Petioli 1-6 cent. longi; folia 1½-2½ cent. longa. Pedunculi 3½-6 cent.; amenta 1-5 cent. longa.

PEPEROMIA, *Ruiz et Pav.*

Sectio TILDENIA, *Miq.*

1. Peperomia *Gardneriana*, *l. c. p.* 73. Radix; tuber subglobosum, pisi—nucis avellanæ magn.
2. P. *Hernandiæfolia*, *l. c. p.* 72. ad sect. *Rhynchophoram* referenda, vide infra.

Sectio MICROPIPER, *Miq.*

3. P. *pellucida*, *l. c. p.* 79.—Trinidad, (*De Schach*, Piper cordifolium). Domingo, (*Dr. Imray*, n. 333.)
4. P. *Vogelii*; erecta pauciramosa glabra succulenta, foliis alternis petiolatis teneris pellucidis et subtiliter pellucido-punctatis rotundato-vel lato-ovato-cordatis, apice lato-rotundatis, summis obtusiusculis, quinque-vel septem-nerviis et parce reticulatis, amentis pedunculatis cum ramulo axillaribus filiformibus dein remotifloris, ovario cylindrico recto, baccis ovato-globosis rostellatis bractea membranacea rotundata pedicellato-peltata suffultis.

Crescit ad Quorra. *Vogelii Collect. ex Expedit. fl. Nigr.*, n. 192, m. Sept. 1841.

P. *Hymenophyllæ* ex ins. Philippinis et P. *exiguæ* e Java admodum similis, ut varietatem fere habuissem, sed cum folia sint pellucido-punctata magis rotundata et majuscula, minus reticulata, amenta longiora et alio modo disposita tanquam speciem propono.

Unicum specimen suppetens 7 cent. altum. Radix parva fibrillosa; caulis ramique valde succulenti in sicco transparentes filiformes. Folium unicum radicale parvum; caulina majora; petioli ½ 1½ cent. longi; folium majus 2⅓ cent. longum, 2½ latum, 5-vix sub-7-nervium, nervo medio ad apicem ducto parce ramoso, lateralibus præsertim extrorsum ramulosis, infimis subtilissimis; folia superiora 1⅓–2 cent. longa et lata, basi minus profunde cordata, in universum magis ovata. Compages in sicco transparenti-membranacea, sed haud perspicue marginata. Pedunculi 3–8 mm. longi; amenta 2 cent. longa, filiformia; bracteæ juniorum imbricatæ, florentes remotæ, demum dissitæ, persistentes, membranaceæ. Ovarium ellipticum, rectum, apice stigmatiferum. Stamina 2, filamenta brevia; antheræ biloculares pallidæ. Baccæ leviter immersæ.

5. P. ***hirtella***; succulenta, basi radicans repens, ramis erectis petiolis pedunculisque appresse hirtellis, foliis alternis ovatis ellipticisve acuminatis vel acutis, acumine obtusiusculo, basi obtusis vel rotundatis, utrinque appresse puberulis subtusque glandulose punctatis, 3-5-nerviis, amentis lateralibus solitariis pedunculatis (pedunculo petiolum parum superante) subdensifloris carnosis teretibus obtusis folio plerumque brevioribus, bracteis persistentibus, baccis globoso-ovatis punctatis.

Crescit in insula Domingo, in mont. Couliaban, (*Dr. Imray*), n. 244.

pallidis bilocularibus. Ovarium ellipticum apice stigmatiferum. Baccæ ovatæ vel subglobosæ ima basi constrictæ, punctatæ, fuscæ.

6. P. *dendrophila*, p. 89; forma minor pollicem vel digitum longa, foliis obovato-vel spathulato-ellipticis 2-3 cent. longis.—Ad Xalapa Mexici, (*Galeotti*).

7. P. *melanostigma*, p. 437. Foliis paullo latioribus.—Surinam (*Hostmann*, n. 437).

8. P. *heterophylla*, repens et erecta, ramosa, herbacea, ramulis junioribus petiolisque tenerrime puberulis cito glabratis, foliis alternis breviter petiolatis, inferioribus minoribus rotundatis vel ovato-aut obcordato-rotundatis, mediis ellipticis utrinque obtusis, summis confertis quandoque suboppositis elliptico-lanceolatis vel lanceolatis quam reliqua multo majoribus apice attenuato-obtusiusculis, omnibus uninerviis et immerse venulosis glabris apice hinc tenere ciliolatis, amentis terminalibus solitariis breviter pedunculatis elongatis annulato-subremotifloris.

Crescit ad Casapi Peruviæ, (*Mathews*, n. 1686).

Ex affinitate P. *myrtifoliæ*. Caulis inter muscos repens, ramosus, filiformis. Petioli antice profunde canaliculati 1-2 mm. longi. Folia in sicco coriacea, inferiora 4-6 mm. longa et lata, media 1-1½ cent. longa, 6 mm. lata, suprema 1-2 cent. longa, 5-7 mm. lata tenuiora. Pedunculi ½-fere 1 cent. longi, amenta 3-7 cent. Bracteæ pedicellato-peltatæ orbiculares. Stamina 2. Ovarium apice stigmatiferum.

9. P. *Vincentiana*; succulenta filiformis vage ramosa repens, ramis erectis petiolisque tenerrime puberulis, foliis alternis breviter petiolatis, inferioribus lato-ellipticis rotundatis vel obovatis, superioribus ellipticis obtusis, basi plerumque acutis, carnosis utrinque tenerrime puberulis cito glabratis, supra læte viridibus, subtus pallidissimis fusco-punctatis uninerviis, amentis terminalibus solitariis breviter pedunculatis teretibus strictis remotifloris.

Crescit in ins. St. Vincent, (*Guilding*).

Præcedenti proxima, forma foliorum distincta. Rami ramulique filiformes dichotome vel opposite ramosi. Petioli

2 mm. longi; folia 5-10 mm. longa 4-7 lata, subtus albicantia et sub lente glandulis fuscis elevatis punctata, adulta fere prorsus glabra. Pedunculi glabri vel glabriusculi, 3-5 mm. longi, amenta 3-4 cent. longa recta. Bracteæ breviter pedicellato-peltatæ orbiculares fuscæ et punctatæ. Ovarium ellipticum apice stigmatiferum. Filamenta brevia, antheræ albicantes biloculares.

10. P. *dasystachya*; succulenta erecta parce ramosa tota molliter pubescens, foliis alternis rhombeo-ovatis ellipticisve, infimis minoribus utrinque obtusis, superioribus acutiusculis, summis attenuato-subacuminatis, 3-5-nerviis et venosis pellucido-punctulatis, utrinque puberulis pilis sensim deciduis, amentis breviter pedunculatis terminalibus solitariis vel ex summis foliis axillaribus quandoque geminis rectis obtusis densifloris, rachi dense hirtello-pubescente, bracteis pedicellato-peltatis sparse piliferis vel glabris, ovario apice stigmatifero.

In Peruviæ Prov. Chachapoyas, (*Mathews*, n. 3229.)

Collocanda in vicinitate P. *acuminatæ* cæt., sed ab omnibus distinctissima et amentis ipsis pubescentibus facile discernenda. Caulis dense molliter pubescens. Folia inferiora minora 2-4 cent. longa elliptica vel ovata, imo plane rotunda, superiora multo majora lato-subanguloso-elliptica ovataque viis nervis 3 mediis distinctis subtus prominentibus, extimis tenuibus submarginalibus, amentis axillaribus solitariis breviter pedunculatis densifloris, ovario apice stigmatifero.

Crescit ad Gongo Soco in Prov. Minas Geraes Brasiliæ, Sept. 1840 (*Gardner*, n. 5187).

Præcedenti proxima, habitu P. *pterocaulem* æmulans. Caulis pedalis subflexuosus parce ramosus, succulentus, angulatus (an fere alatus?). Folia inferiora breviora latiora superioribus minora, 4½-6½ cent. longa, 2½-3 lata ovata vel elliptica brevius acuminata, superiora 8-10 longa, 3-2 lata, in sicco membranacea, supra atro-viridia, subtus pallida, nervis 3 mediis ad apicem ductis subsimplicibus. Petioli 3-5 mm. longi, antice canaliculati. Amenta 6-10 cent. longa, rectiuscula vel leviter curvata, teretia, sursum aliquid attenuata.

13. P. *Hamiltoniana*; carnosa glabra e basi radicante erecta dichotome ramosa, foliis alternis breviter petiolatis carnosis pellucido-punctatis, summis confertis, rhombeo-vel lanceolato-ellipticis acutiusculis vel obtusis, basi cuneatis, subtus pallidis trinerviis, nervo medio ad apicem ducto, amentis terminalibus solitariis breviter pedunculatis elongatis subdensifloris, ovario apice stigmatifero.

Crescit in Jamaica (*Purdie*, n. 108).

Planta pedalis. Petioli e basi dilatata antice canaliculati 1-2 mm. longi; aliquando nulli. Folia 2-4 cent. longa, 1-2 supra medium lata, plerumque rhombeo-elliptica, quandoque sub-obovato-rhombea, summa anguste elliptica, semper basi cuneata, supra saturate viridia, subtus pallida, nervis 3 distinctis, et sub lente adhuc 2 lateralibus hinc sub-5-nervia, reticulata et pellucido-punctata, sicco coriacea. Pedunculi 2-5 mm. longi. Amenta 4-7 cent. longa, pennam corvinam fere crassa, subdensiflora. Bracteæ pedicellato-peltatæ orbiculares.

14. P. *spectabilis*; succulenta erecta, caule petiolisque dense pubescentibus, foliis alternis? summis subternis, petiolatis ovatis acuminatis basi rotundatis vel acutiusculis succulentis, supra sparse et decidue subtus paullo densius

puberulis, uninerviis et tenuiter penniveniis, amentis in panicula ampla terminali verticillatim dispositis, verticillis (3) singulis e 3-6 amentis remotifloris filiformibus longiusculis, bracteis pedicellato-peltatis orbiculatis, ovario apice stigmatifero.

In Peruvia (*Mathews*, n. 1685).

Ramulus saltem adest, sed speciem certissimam et singularem sistens, foliorum forma P. *dependenti* haud plane absimilem, inflorescentia fere ad *Sect. Panicularium* accedentem. E cicatricibus folia alterna videntur, sed 3 summa basi pedunculi communis verticillatim circumposita sunt. Petioli 3½ cent. longi, basi lata semiamplexicaules, pubescentes sensim glabrati. Folia 14-15 cent. longa, 7-8 lata, supra saturate viridia, pilis sparsis mollibus densim deciduis, subtus pallida, pilis paulo densioribus. E nervo medio subtus prominente et percurrente venæ horizontales pinnatim exortæ utrinque usque ad ¾ alt. 10 circiter majores, et aliæ minutes, parce ramulosæ. Inflorescentia terminalis pedunculo communi 5 cent. longo sustenta, axi fere 10 cent. longo cum pedunculis tenuiter pubescente. Tres amentorum verticilli infimus dimidiatus, alter medius e 7, tertius terminalis e 5 amentis, filiformibus rectis 10-14 cent. longis, pedunculis 1 cent. vix æquantibus. Flores remotiusculi minuti. Bracteæ sparse pilosis cito glabratis, foliis oppositis petiolatis latis ovato-rhombeis vel ellipticis acuminatis acutis vel obtusis, basi rotundatis vel cuneatis, 5-7-nerviis, amentis axillaribus et solitariis dissitifloris.

Crescit in insulis maris Pacifici corallinis, Nohoan, Tahiti.

Petioli 1-2 cent. longi; folia 3-6 cent. longa, 2½-4½ lata, subglandulosa, supra saturate viridia, subtus pallida, nervo medio ad apicem ducto. Amenta 5 cent. longa; ovarium apice stigmatiferum.

18. P. *Abyssinica*; succulento-carnosa glaberrima, dichotome ramosa, basi repens radicans aphylla, superne foliosa, foliis alternis summis confertis quandoque suboppositis, breviter petiolatis reflexis (præter novella et pauca radicalia parva subrotunda) ellipticis rhombeo-ellipticis vel obovatis, utrinque obtusis vel apice rotundatis aut emarginatis enerviis vel obsolete uninerviis, amento terminali solitario brevi pedunculum æquante remotifloro, bracteis pedicellato-peltatis orbicularibus, ovario elliptico apice stigmatifero.

Crescit in rupibus vallis Maschicha inter Debra Dschoa et Abu Mekkana; repens. 2 Mart. 1840 (*Schimper*, *It. Abyss. Sect. II.* n. 1319.)

Habitu P. *retusæ*, amentis P. *Borbonensi* quodammodo similis, sed distinctissima ab omnibus. Caulis vage repens, inferne radicans et aphyllus, internodiis 3-6 cent. longis; superne brevioribus 2-½ cent. longis, ad nodos incrassatis. Petioli 1-2 mm. longi: folia 1-2½ cent. longa, 5-12 mm. lata, exsiccata pallida coriacea, minora rotundata vel elliptica utrinque obtusa, majora rhombea versus apicem sæpe attenuata sed semper obtusa. Pedunculi 1½ cent. longi; amentum (unicum suppetens) 12 mm. longum, carnosum; flores remoti subimmersi. Bracteæ persistentes. Stamina 2, filamentis brevissimis, antheris globosis bilocularibus. Ovarium fecundatum ellipticum obtusum.

19. P. *macrothyrsa*; carnosa glabra erecta inferne simplex et aphylla, foliis alternis ad apicem caulis primarii dense aggregatis crasse carnosis petiolatis elliptice vel lanceolate

dolabriformibus basi attenuatis, apice contracto obtusiusculis, caule supra foliorum comam elongato parce folioso et aphyllo amentifero alte paniculato, amentis in axillis foliorum floralium vel bracteæformium sessilibus 2-4-fasciculatis inæquilongis subdensifloris.

Crescit in Peruviæ Prov. Chachapoyas, (*Mathews*, n. 3228.)

Pulchra species, P. *dolabriformi* omnibus partibus cognata, statura autem majore, foliis longiuscule petiolatis, inflorescentia multoties majore et magis composita, amentis majoribus certe sui juris.

Caulis e basi hypogæa horizontali radicante erectus, inferne nudus carnosus teres glaber, digitalis, penna cygnea crassior, apice densa foliorum patentium coma coronatus, Tabulatorum Sempervivorum fere ad instar. Folia petiolis ½-1 cent. longis sustenta, 2 cent. circiter longa, 8-10 mm. lata, crassa, marginibus extenuatis rigida, nervis parcis immersis pertensa. E coma foliosa prorumpit caulis 25 cent. longus, amentifer, inde a basi paniculatim ramosus, foliis dissitis alternis inferioribus præter minorem magnitudinem conformibus, superioribus sensim minoribus sessilibus ellipticis, summis minutis bracteæformibus. Amenta 1-5 cent. longa, sensim elongata, filiformi-teretia. Bracteæ breviter pedicellatæ peltatæ orbiculares, centro fuscæ, marginibus latis pallidæ suberosulæ. Ovarium ovatum apice stigmatiferum

Species admodum singularis, cum nullo congenerum comparanda, foliorum forma ad P. *cuneifoliam*, *obtusifoliam* cæt. accedens, sed ad Micropiperis sectionem referenda, ab inflorescentiam P. *Berteroanæ*, *margaritiferæ* aliquatenus affinis. Caulis radicans aphyllus. Folia duo ad ejus apicem, unum majus 18 cent. longum, 7⅓ latum, venis circiter 8 utrinque e nervo medio adscendentibus, petiolo 2½ cent. longo antice canaliculato; alterum 13 cent. longum, 4 latum. Inflorescentia infra amenta (pedunculus) 2 cent., cæterum 4½ cent. longa, amentis alternis vel raro binatis onusta, quorum inferiora 1 cent. longa, summa vix 2 mm.; pedicelli basi bractea decidua stipati. Bracteæ peltatæ orbiculares fuscæ. Filamenta brevia, antheræ biloculares aurantiacæ demum flavescentes.

21. Peperomiæ *species*; *dissimili* vel *blandæ* proxima, e specimine manco haud tuto determinanda, e Columbia, (*Hartweg*, n. 1395.)

22. P. *Quitensis*; succulenta erecta ramosa, ramis præsertim ad nodos, petiolis foliisque utrinque in nervis marginibusque setuloso-hirtis, his oppositis petiolatis rhombeo-ovatis ellipticisve utrinque acutiusculis, apice ipso obtusiusculo, subtus punctatis, trinerviis nervo medio ad apicem ducto, amentis longiuscule pedunculatis (pedunculo petiolum ter quaterve superante) axillaribus oppositis et terminalibus subpaniculato-congestis subconfertifloris.

Crescit prope Quito, supra truncos in vallibus, cæt., (*Jameson*, n. 59.)

P. *polystachyæ* et *dissimili* cognata, haud dubia tamen species. Planta pedalis succulenta, internodiis 2-5 cent. longis. Caules inferne glabriusculi, superne ramulique hirti, nodis setuloso-barbatis. Folia opposita decussata, petiolis antice lato-canaliculatis et glabriusculis, cæterum dense hirtis 2-½ cent. longis sustenta, inferiora lato-elliptico-rhombea, utrinque acutiuscula, supra in nervis sparse hirta, subtus glandulis fuscis punctata, in nervis densius cæterum sparse hirtella, 3½-4 cent. longa, 2½ lata, trinervia, nervo medio subtus prominulo. Superiora minora et magis elliptica 2-2½ cent. longa apice attenuato obtusiuscula, pilis crebrioribus. Amenta axillaria et terminalia foliis abortientibus conferta, 3-5 cent. longa, teretia obtusiuscula, inferne quidquam contracta, pedunculis sparse pilosis ½-1 cent. longis sustenta. Bracteæ breviter pedicellatæ peltatæ orbiculares membranaceæ glabræ. Stamina 2. Ovarium ellipticum apice stigmatiferum.

23. P. *insularum*; succulenta adscendens radicans ramosa, ramulis petiolis foliis subtus in nervis pedunculisque sparse puberulis sensim glabratis, foliis oppositis petiolatis rhombeo-ellipticis vel -sublanceolatis, basi cuneatis acutis vel obtusis apice attenuato vel subacuminato obtusiusculis, 3- vel 5-nerviis, nervo medio percurrente crassiusculo, lateralibus tenuibus, amentis axillaribus et terminalibus, plerumque aggregatis 1-5 pedunculo longioribus teretibus obtusis subdissitifloris, ovario apice stigmatifero.

Crescit in ins. Sandwich, Oahu (*J. Diell*, n. 53.) Ex affinitate P. *Sandvicensis* et P. *latifoliæ*.

Caulis ½-1 pedem longus, basi radicans decumbens, cæterum erectus, basi glaber, superne pilosulus, internodiis brevibus (3- plerumque 1 cent.), nodis tumidis. Petioli 2-10 mm. longi, antice canaliculati, cito glabrati; folia carnosa, nascentia. Supra in nervis pilosa, adulta glaberrima, 1½-2 vel 3½ cent. longa, 1-1½ lata, supra nervis 3 impressis, subtus 3-5 pertensa, *Crescit* in Madagascaria, (*Dr. Lyall*). Folia ½-1½ cent. lata. Num hæc *Piper Nummularium Lam.*, nondum extricatum, conf. *Syst. Pip.* p. 131.

26. P. *leptostachya*, p. 138, forma *nana*, spithamæa, caule simplici, foliis obovatis obovato-ellipticis ellipticisve.—*Piper Australe, Cunn.* Hab. Vertical face of sandstone rocks, Campden Plains, N. Holland.

27. P. *flagelliformis*, *Hook. fil. MSS.*; erecta succulenta glabriuscula, foliis breviter petiolatis verticillatis 2-4 elliptico-spathulatis obtusis, basi acutis uninerviis subaveniis subtus pallidis et petiolis ramulisque nascentibus tenerrime subpuberulis, amentis verticillatis 6-7 pedunculatis remotifloris, baccis ovatis acutis verruculosis.

In ins. Galapagos (James Island) ineunte Oct. 1835, legit *cl. Darwin.*

Species distinctissima, cum sola fere P. *leptostachyæ* quodammodo comparanda. Caulis erectus, simpliciusculus? succulentus, internodiis 5-6 cent. longis. Petioli 1-2 mm. longi, canaliculati puberuli interdum subciliolati, folia 1½-2 cent. longa, 6-7 mm. apice lata, in sicco submembranacea, supra saturate viridia, subtus pallida. Amenta erecta pedunculis 1-2 cent. longis filiformibus suffulta, filiformia, remotiflora, glabra. Flores demum valde distantes. Bracteæ brevissime pedicellatæ suborbiculares membranaceæ subundulatæ glabræ. Stamina 2, antheris subglobosis. Ovarium ellipticum, stigmate terminali. Baccæ atrofuscæ oblique ovatæ acutæ punctulato-verruculosæ millimetro minores.

28. P. *Fernandeziana*, p. 139.—In sylvis umbrosis frigidis montium editiorum ins. Juan Fernandez, Apr. 1830, (*Bertero*, n. 1491.)

29. P. *recurvata*, p. 141, *var. Philippinensis*, foliis ellipticis vel obovato-ellipticis, subtus in nervis marginibus petiolis ramulisque puberulis. Folia 1½-2½ cent. longa, 1-1⅔ lata.

Crescit in ins. Philippinis, (*Cuming*, n. 1920.)

30. P. *Mathewsiana*; erecta succulenta opposite ramosa molliter puberula, foliis verticillatis 4-6, raro 2, breviter petiolatis utrinque pubescentibus, pilis subtus su-

pra nervos densioribus, rhombeo-spathulatis basi cuneatis, apice attenuato obtusiusculis, superioribus rhombeo-lanceolatis pellucido-punctatis trinerviis nervo medio ad apicem ducto subtus prominente, lateralibus tenuibus, amentis axillaribus verticillatis terminalibusque breviter pedunculatis filiformibus elongatis subdensifloris, bracteis pedicellato-peltatis glandulosis, ovario apice stigmatifero.

Crescit in Peruvia, Cassapi, Zacopota, (*Matthews*, n. 1688.)

Ex affinitate P. *hirsutæ*, *camptotrichæ*, *blandæ*, pubescentia, foliorum situ et forma satis distincta. Planta pedalis et altior. Internodia 3-5 cent. longa. Petioli 2-5 mm., æque ac caules pube molli brevi densa obtecti. Folia 2½-3 cent. longa, 1-1½ lata, interdum angustiora sublanceolata; nervi parce ramosi. Amenta numerosa; in verticillo foliorum supremo et penultimo verticillata nec non terminalia, 4-8 cent. longa, filiformia, recta, erecta, subconfertiflora, pedunculis glabriusculis ½-1 cent. circiter longis sustenta. Flores virginei confertiores. Bracteæ orbiculares. Ovarium ellipticum.

31. P. *pereskiæfolia*, p. 150.—St. Catharina Brasiliæ, (*Tweedie*.)

32. P. *septemnervis*, p. 152. Amenta terminalia solitaria vel gemina, 7-14 cent. longa, cylindrica, obtusa, densiflora. Bracteæ pedicellato-peltatæ. Baccæ ovatæ fuscæ antica apice scutulo auctæ, quare hæc species rectius ad *Sect.*

ferum. Baccæ globosæ vel ovato-globosæ subrostratæ.—Quoad genitalia certe e *Sect. Micropiperis* et P. *reflexæ* similis.

Cresc. in ins. St. Vincent, (*Guilding*), St. Domingo, (*Imray*, n. 334.)

33. P. *Myrtillus*, p. 154, *forma* foliis latioribus et brevioribus, 1-2 cent. longis, 5-8 mm. latis, magis ellipticis, trinerviis.

Cresc. in Jamaica, (*Macfadyen* sub "P. discolor.")

34. P. *Hartwegiana*; carnosa, adscendens, dichotoma, caule angulato glabriusculo, ramulis petiolisque dense hirtello-pubescentibus, foliis verticillatis 4-5 subpatulis lato-vel subobovato-ellipticis, basi acutiusculis, apice obtusis, raro emarginatis vel mucronulatis, marginibus subrevolutis, crasse carnosis supra præsertim versus basin puberulis sensim glabratis, subtus glabriusculis et glanduloso-punctatis prope basin uninerviis subaveniis, amentis terminalibus solitariis vel binis pedunculatis densifloris, ovario oblongo acuminatim attenuato apice stigmatifero, baccis ovatis acutis subobliquis punctatis.

Crescit in Columbia (*Hartweg*, n. 1401).

Ex affinitate P. *quadrifoliæ*.—Caulis spithamæus, inferne e nodis radicans; internodia 3-4 cent. longa. Ramuli 1 cent., hirtello-incani pilis varie curvatis, haud raro subretrorsis. Petioli eadem pube obtecti lato-canaliculati 1-2 mm. longi. Folia in sicco crasse coriacea, 8-15 mm. longa, 6-10 lata, pleraque elliptica, basi acutiuscula raro obtusa, pallide viridia, subtus præter basin glabriuscula, obsolete uninervia, nervo luci obverso ad ½ alt. saltem distincto. Pedunculi tenerrime puberuli 1-1½ cent. longi. Amenta 4-5 cent. longa, versus basin 2 mm. crassa, sursum vix attenuata erecta, rectiuscula, densiflora. Bracteæ longiuscule pedicellatæ orbiculares, glabriusculæ, marginibus pallescentibus, subundulatæ, persistentes. Stamina 2, filamentis brevibus, antheris bilocularibus. Stigma majusculum.

35. P. *Deppeana*, p. 160, forma major. Caulis petiolisque pubescentes; folia terna vel sæpe quaterna longiuscule petiolata obovata superne in 3 nervis puberula, marginibus

ciliolata, subtus glabriuscula, 8-12 mm. longa.—In Brasilia, in sylvis umbrosis ad Laguna de Ranco (*Gardner,*) n. 705.

36. P. *Selloviana*, p. 161, forma aliquid major; ad Rio grande (*Tweedie*, n. 829.)

37. P. *Galapagensis*, *Hook. fil.*, succulenta (adscendens?) ramosa, ramis ramulisque tetragonis tenere puberulis, foliis verticillatis 2-6 breviter petiolatis patulo-reflexis succulentis pellucido-punctatis glandulosis glabriusculis oblongo-linearibus vel anguste ellipticis utrinque obtusis uninerviis aveniis subtus convexis, amentis axillaribus et terminalibus 3-5-verticillatis pedunculatis filiformi-clavatis confertifloris, bracteis pedicellato-peltatis subrotundis pellucido-glandulosis, filamentis longiusculis, ovario ovato-elliptico subobliquo apice stigmatifero, baccis parumper immersis, subgloboso-ovatis acutis punctato-verrucosis.

Crescit in insulis Galapagos (St. James) *Darwin*, Oct. 1835.

P. *microphyllæ* accedens, sed foliis angustioribus haud ciliatis cæt. discernenda.

Caules spithamæi, patule et opposite ramosi, pilis patentibus tenerrimis inspersi, internodiis 2-1 cent. longis, superne foliosi; ramuli apice amentiferi. Folia in sicco coriacea, glandulis pellucidis præsertim versus marginem distinctis, (*Barclay, Beechey*). Specimen sterile ab *All. Cunningham*, *sub.* n. 39 in ins. Norfolk lectum hæc etiam pertinere verisimile habeo. "Rocks in dark moist woods; creeping, herbaceous, with obtuse elliptical 3-nerved leaves. — Folia quaterna, terna, vel et opposita."

Sectio PANICULARIA, *Miq.*

39. P. *umbellata*; erecta succulenta glabra simpliciuscula, foliis (præter pauca radicalia) ad apicem caulis confertis cordato-rotundatis vel rotundato-ovatis obtusis tenuiter 5-7-nerviis, caule supra folia elongato amentifero simplici aphyllo vel pauciramoso et folioso, amentis in ramulorum apicibus umbellatis numerosissimis filiformibus remotifloris, bracteis infra medium pedicellato-peltatis.

Crescit in Peruviæ Chachapoyas 1840, (*Mathews*, n. 3230.) Differt a P. *secunda* glabritie et facillime inflorescentia. Radice et habitu ad *Sect. Tildeniæ* spectat.

Radix tuberosa pisi magnitudinis. Caulis succulentus 6-8 cent. longus, supra foliorum comam adhuc paullo longior florens. Petioli ½-1½ cent. longi; folia 1½-2 cent. longa et lata, aliquid latiora quam longa, succulenta, in sicco sub-coriaceo-membranacea, nervis tenuibus subsimplicibus pertensa, medio ad apicem ducto. Umbellæ longe pedunculatæ basi foliis floralibus bracteæformibus viridibus vel plerumque decoloribus parvis sessilibus ellipticis instructæ. Amenta 10-20 raro pauciora in quavis umbella, 1-3 cent. longa, pedunculis ⅔ cent. longis sustenta filiformia, genitalia ut in P. *secunda*.

Sectio RHYNCHOPHORUM, *Miq.*

40. P. *angulata*, *l. c. p.* 180. Amentum 3 cent. longum, pedunculo 1½ cent. longo sustentum, filiforme teres densiflorum, uti in P. *muscosa*, quæ vix satis diversæ videntur. —In Surinam, (*Hostmann*, n. 470.)

41. P. *Parkeriana*, succulenta glabra ramosa radicans, foliis alternis modice petiolatis succulentis glanduloso-punctatis ovato-vel elliptico-oblongis acute acuminatis plerumque

inæquilateris basi rotundatis vel acutis, summis sublanceolatis uninerviis utrinque tenuiter 3-4 venulosis, amentis ramulos aphyllos terminantibus pedunculatis (pedunculo petiolum circiter æquante) plerumque conjugatis elongatis densifloris, ovario acuminato-scutato.

Crescit in Guiana Anglica (*Parker*).

P. *distachyæ* proxima, sed glabritie et foliorum forma constanter distincta.—Specimina P. *distachyæ* foliis latioribus insignia in *Syst. Pip.* a me commemorata, ad hanc pertinere videntur.

Planta valde succulenta, in sicco omnino membranacea. Petioli 1½-2½ cent. longi, antice canaliculati glabri. Folia 10-13 cent. longa, 6-4½ lata, superiora 8-9 longa, 3 lata, omnia præsertim versus apicem obliqua. Venæ utrinque plerumque tres, quarum duæ basi magis approximatæ, tertia ad ⅓ alt. circiter exorta, et paucæ aliæ tenuissimæ omnes præsertim extrorsum parce ramulosæ, nequaquam reticulatæ. Pedunculus communis 2 cent. longus, apice foliis floralibus lineari-lanceolatis paucis instructus, partiales plerumque bini, 1-2 cent. longi. Amenta florentia 12-18 cent. longa. Bracteæ pedicellato-peltatæ orbiculares, in sicco ochraceæ pallide marginatæ.

42. P. *Hernandiæfolia*, *l. c. p.* 73, nunc primum a me visa, e

longa, 2½ fere 5 lata. Pedunculi 4-5 cent. longi, medio vel supra medium bractea lanceolata sessili vel subpetiolata acuminata puberula convoluta 5 mm. longa amplexi. Amenta 2 cent. longa carnosa. Bracteæ carnosæ pedicellato-peltatæ orbiculares glabræ marginibus extenuatæ. Ovarium ovato-ellipticum acuminatum, infra apicem stigmatiferum. Stamina 2, antheræ biloculares. Baccæ ovatæ subnitidæ fuscæ, acumine filiformi pallido superatæ.

43. P. *nigropunctata*, p. 188. In ins. Antigua (*Nicholson*, n. 40.)

44. P. *Columbiana*, carnosa glabra erecta, caule angulato, foliis densis sparsis hinc suboppositis sessilibus vel subsessilibus lanceolatis vel elliptico-lanceolatis utrinque attenuatis glabris subtus uninerviis et parce prominule venosis, glanduloso-punctatis, amentis terminalibus aggregatis (3) longiuscule pedunculatis teretibus obtusis rectis pedunculum æquantibus densifloris, bracteis subsessili-peltatis, ovario rachi immerso infra apicem stigmatifero.

Crescit in Columbia (*Hartweg*, n. 1397.)

Species certa sed ex imperfecto specimine haud rite describenda. Ramus est spithamens, majorem partem aphyllus, cicatricibus foliorum prominentibus notatus, superne dense foliosus. Folia erecta carnosa, marginibus revoluta, subtus nervo medio prominente notata, e quo venæ parcæ adscendentes prominulæ exoriuntur, ibique glandulis fuscis punctata, 2-3 cent. longa, 5-6 mm. lata. Pedunculi 1½-2 cent. longi; amenta 1½-2½ cent., obtusa, recta, rachi foveolata.

45. P. *obtusifolia*; forma oblongifolia, p. 194.—In ins. St. Vincent (*Guilding*), in Jamaica (*Macfadyen*).

P. *obtusifolia*? forma pusilla, foliis elliptico-obovatis (3-5½ cent. longis) nervo medio e basi utrinque 2-3-venoso, 5-7 plinerviis.—Peruvia, (*Mathews*, n. 1687).

46. Peperomiæ *species incerta*, *talinifoliæ* et *pyrifoliæ* proxima, foliorum apice acutato incurvo diversa, haud tuto extricanda. Peruvia, (*Mathews*).

47. P. *cuneata* (Piper cuneatum, *Herb. Hook.*) Carnosa glabra, foliis alternis longiuscule petiolatis cuneato-vel obovato-spathulatis obtusis raro retusis, uninerviis et prope

basin utrinque trivenosis, amentis terminalibus vel e foliorum supremorum axillis, solitariis longe pedunculatis, pedunculo plerumque unibracteato, densifloris, ovario oblique acuminato antice stigmatifero, baccis acuminatissimis.

Crescit in ins. St. Vincent, (*Guilding*).

P. *obtusifoliæ* præ reliquis cognata, sed statura minore et foliorum forma haud dubia species.—Carnosa basi radicans, superne erecta. Petioli antice plano-canaliculati 2 cent. longi. Folia spathulata obtuso-rotundata, basi cuneata in petiolum attenuata, carnosa, utrinque glandulis fuscis crebris elevato-punctata, glabra præter apicem aliquando parcis pilis secus marginem instructa, subtus pallida nervo medio percurrente instructa, venis e basi vel prope basin utrinque circiter 3 adscendentibus in sicco supra discernendis, 4-7 cent. longa, 1½-2½ paullo infra apicem lata. Pedunculi 4-5 cent. longi. Amenta 7-8 cent. rectiuscula, carnosa, cylindrica obtusa densiflora. Bracteæ pedicellato-peltatæ orbiculares persistentes. Stamina 2. Baccæ apice sterili filiformi (an demum deciduo?) appendiculatæ.

48. P. *amplexicaulis*, p. 196, forma grandifolia.—Decumbens, radicans, succulenta, glabra, foliis alternis sessilibus vel subsessilibus cuneato-spathulatis apice attenuato obtusius-

2. P. *sidæfolia*, *l. c. p.* 209.—In Brazilia, Serra de Acaripe; suffrutex 4-pedalis, (*Gardner*, n. 1850.)
3. P. *Dombeyana*, *l. c. p.* 211.—In Peruvia (*Mathews*, n. 1701.)
4. P. *subpeltata*, p. 213. Ceylon, (*Walker*, n. 1382), Ceylon? Bonin (*Dr. Mertens*, n. 86. H. *ex Herb. imp. Petersb.*), Mauritius (*Bojer* sub nomine Peperomia latifolia, n. 46; specimina hæc ut omnia quæ ex hac insula vidi, statura minora).—Fernando Po ad Gutridge Bay, Nov. 1841 (*Vogel*, n. 53, caules plures in medium cæspitis. "Caulis herbaceus 4-5 ped. Radix fibrosa stolonifera" in Sched.) Specimina Vogeliana nulla nota ab Indicis et Orientali-Africanis diversa; quare nunc non amplius dubitandum videtur *Piper grandifolium Eckl. in Afz. pl. Guineens.* huc esse referendum.

MACROPIPER, *Miq.*

1. M. *latifolium*, *l. c. p.* 218, masc.—Coral Islands (*Beechey*). Amenta masc. 2 axillaria videntur.—*Fœm.* in Tahiti (*Barclay*, sub nomine "Piper methysticum;" inc. *Ava Ava irai*; verisimiliter hæc species itaque etiam ad potum inebriantem parandum inservit.

Alia hujus speciei forma amentis solitariis axillaribus, foliis superioribus dilatato-ellipticis basi obtusis vel attenuatis, apice protracto obtusatis, septemnerviis utrinque glabris; vix pro specie diversa habenda.

Hab. Shady places, rich soil: Society and Friendly Islands, May, June, 1830, 4 feet. (*Mathews*. n. 86.)

2. M. *puberulum*, p. 221. In ins. Nukalau, Feejee Islands (*Barclay*).—Descriptioni accuratissimæ, quam cl. *Bentham* dedit hæc addo: Caules teretiusculi tenuiter striati glabri. Petioli 2-4 cent. longi usque ad medium alis angustis conniventibus vel leviter reflexis instructi. Folia membranacea subtilissime pellucido-punctata, supra saturate viridia glabra, subtus pubescentia, pilis in nervis densioribus, 7-9-nervia, nervo medio ad apicem, 2 lateralibus per anastomoses ad eum continuatis, reliquis multo brevioribus, omnibus reticulatim et prominule anastomosantibus.

Pedunculi 2 vel 1 axillares, 2 cent. longi glabriusculi; amenta fœm. florentia filiformi-teretia, baccifera cylindrico-incrassata, 12-14 cent. longa. Bracteæ brevissime pedicellatæ peltatæ membranaceæ fuscæ marginibus undulatæ reflexo-complicatæ, persistentes. Ovarium trigono-obovatum, circa apicem peltato-marginatum, stigmata 3 ovali-lanceolata pubescentia reflexa. Baccæ maturæ basi et cum bracteis syncarpis ad instar cohærère videntur, stigmatibus adhuc persistentibus coronatæ.

3. M. *excelsum, l. c. p.* 221. Ex eximiis speciminibus hujus speciei, nunc primum a me examinatæ, ita phrasis describenda: Frutescens glabrum, foliis membranaceis pellucido-punctatis lato-rotundato-ovatis breviter et obtuso-acuminatis vel acutis, æquilateris, basi cordatis, 7 fere 9-nerviis, superioribus ovatis, summis rhombeo-vel lanceolato-ovatis 5-nerviis, petiolis ad medium alatis, alis coriaceis in dorso reflexo petioli conniventibus, amentis axillaribus, vel ramulum lateraliter terminantibus, plerumque geminis, fœmineis cylindricis brevibus, masc. longioribus cylindrico-filiformibus.

Crescit in Nova Zelandia, (*Fraser, J. D. Hookèr, R. Cunningham,*) ad Bay of Islands (*Colenso*), Northern Island (*Edgerley*, n. 323), Auckland (*Dr. Sinclair.*)

CHAVICA, *Miq.*

1. Ch. *Siriboa*, p. 224.—Amentum fœm. maturum speciminis in Philippinis a *Cumingio* lecti 2½ cent. tantum longum, itaque multo brevius quam in Javanis.
2. Ch. *Benthamiana*, *l. c. p.* 233. *Cresc.* in ins. Tobie (*Barclay*). Species certe bona, Ch. *Siriboæ* et Ch. *Betle* affinis. Petioli 1½ cent. longi, folia 7-4½ cent. longa, 6-fere 4 lata, 5- vel 5-plinervia, nervis 3 mediis parum supra basin liberis, medio saltem ad apicem ducto, anastomosibus parvis et tenuibus. Pedunculi 1½ cent., amenta 1 longa. Folia subpeltata in sp. suppetente fœm. haud adsunt.
3. Ch. *Roxburghii*, p. 239.—Ceylon (*Herb. Pallas*, n. 88, *Walker*,) Assam, in vallibus (*Griffith*, n. 519, n. 553.)
4. Ch. *sarmentosa*, p. 242.—Mergui (*Griffith.*)
5. Ch. *densa*, p. 252, *mas.?* Java (*Zollinger*, n. 974,) *fœm.?* (n. 724.) Ob sp. manca determinatio fallax.
6. Ch. *officinarum*, p. 256.—*Wallich* List. 6650 *E.*—Java (*Zollinger*, n. 907, *fœm.*,) China (*Millett*).
7. Ch. *sphærostachya*, p. 278, *fœm.* Assam (*Fielding*,) Khasiya (*Griffith*, n. 132.)
8. Ch. *Penangensis*, p. 279. Sub Pipere Lonchite n. 6644 *B.* *Herb. Wall.*—Stolo sterilis? (Mayaburan (*Sir F. Adam.*)
9. Ch. *corylistachya*, p. 281 ; forma *major*, foliis 20 cent. longis, 6½ latis, amentis cylindricis obtusis 6½ cent. longis, calamum scriptorium crassis. Philippinæ (*Cuming*, n. 1813.)

RHYNCHOLEPIS, *Miq.*

1. Rh. *Cumingiana*, p. 282, *fœm.*, *Cuming* ex ins. Philippinis, n. 1697. Sub hoc numero in collectione Hookeriana specimen video diversum ab eo quod in Lessertiano sub eodem numero vidi: differt foliis ovatis vel lato-oblongis anguste acuteque acuminatis, basi conniventi-cordatis, 7-11-nerviis, imo multinerviis, sed nervulos basilares adnumeres, 17 cent. longis, 6½-8 latis, itaque multo latioribus. Amentum cylindricum obtusum 5-6 cent. longum, 5-8 mm. crassum,

bracteæ ut in mare longe lineari-acuminatæ ciliatæ. Stigmata 3 linearia hirtella stylo longiusculo sustenta. Baccæ densæ succulentæ obpyramidatæ angulosæ rostratæ.

Differt itaque hæc species ab Rh. *brevicuspide* facillime etiam bractearum forma et ex illa Rh. *Cumingianæ* forma character generis paullo emendandus erit.

CUBEBA, *Miq.*

1. C. *officinalis*, p. 285. Java (*Zollinger*, n. 727,) *masc.* (n. 943.)
2. C. *Wallichii*, p. 289.—*Wall. List.* n. 6637.
3. C. *canina*, p. 293. Java (*Zollinger*, n. 677.)
   Ejusdem forma *angustifolia*, foliis omnibus lanceolatis quintupli- vel triplinerviis, 6-8 cent. long., 1-2 latis. Java, *Zollinger*, n. 698, *b.*)
4. C. *Bantamensis*, *l. c. p.* 299. Java, (*Zollinger*, n. 710.)
5. C. *Borbonensis*, p. 301. Mauritius, (*Bouton*, sub "Pipere sylvestre," *Bojer*.)
6. C. *Clusii*, p. 304; ramis teretiusculis, ramulis tetragonis vel tetragono-compressis, nascentibus petiolis foliisque subtus in nervis primariis pedunculisque tenerrime pubescentibus, foliis modice petiolatis, infimis ovatis æquilateris acuminatis basi æquali cordatis, superioribus majoribus lato-ellipticis acuminatis æquilateris vel inæquilateris basi

atque ita res in distributione geographica Cubebæ generis et Piperacearum in universum admodum memorabilis extra omne dubium posita est. Est autem hæc species arcte cognata cum reliquis congeneribus africanis, C. *costulata*, *Borbonensi* et *Capensi*, habitus simillima, obiter intuenti vix diversa, accuratius autem observatu, characteribus solidis e foliorum nervatione et compage petitis certa species.

Rami scandentes dichotomi pennam corvinam crassi, teretiusculi, hic illic flexuosi, sordide fusci rugulosi subsulcati; ramuli citissime glabrati, nodi tumidi hic illic radicantes. Folia inferiora petiolis 1-1½ cent. longis sustenta, 4-6 cent. longa, 2½-3½ lata æquilatera, ovata, acuminata, acumine brevi angusto acuto, basi æquali obtusa aut subcordata, costulis e nervo medio haud procul a basi ortis utrinque 2 majusculis adscendentibus reliquis summis tenuibus patulis, supra atroviridia opaca glabra, subtus pallida albicantia ad lentem albo-maculata, epunctata, saltem inter areolas translucidiora. Superiora multo majora magis elliptica vel oblonga plerumque leviter inæquilatera, basi inæqualia, petiolis 1 cent. longis vel brevioribus sustenta, 8-11⅓ cent. longa, 4½ fere 7 lata, basi inæquali plus minus subcordata, lobulis plerumque conniventibus, majori petiolum sæpe obtegente, apice subabrupte breviter acuminata, acumine subobliquo obtusiusculo juniore mucronato, costis plerumque 3 majoribus ad ⅓ alt., patulo-adscendentibus, aliisque paucibus ad basin et versus apicem patulis, omnibus laxe reticulatis; suprema minora haud raro angustiora, quandoque sublanceolata, 6 cent. longa, 3⅓-2 lata. Stipulæ oppositifoliæ deciduæ carinato-lineares parvæ subpuberulæ. Pedunculi 1-1½ cent. longi. Amenta 1½-2 cent., curvata, densiflora. Bracteæ oblongæ centro adnatæ, introrse hirtæ, extus glabræ. Baccæ ovatæ acutæ vel et obtusæ, plerumque apiculatæ vel subrostellatæ, quandoque subglobosæ 4-5 mm. longæ. Ovaria quædam adsunt elliptica apice attenuata, stigmatibus 3 lanceolatis acutis pubescentibus reflexis.

7. C.? *hederacea*, (Piper hederaceum *A. C. MS.*); alte scandens dichotome ramosa nodosa glaberrima, foliis

coriaceis obsolete pellucido-punctatis, subtus pallidis, ovatis attenuato-acuminatis acumine subobliquo obtusiusculo, basi subæquali rotundatis vel obtusis, marginibus leviter revolutis, quintupli- vix subseptuplinerviis, nervo medio ad apicem ducto, venulis immersis, pedunculo petiolum circiter æquante, amentis (masc.) cylindricis obtusis folio multum brevioribus, bracteis peltatim sessilibus orbicularibus coriaceis glabris imbricatis, staminibus 2.

HAB. Five Islands, (*A. C.* Jan. 1829; altissimas arbores adscendens.)

Species distinctissima, sed in genere nondum certa, aliquatenus foliorum forma cum *C. Neesiana* comparanda.

Ramuli teretiusculi ramulique angulosi glabri, fuscescentes, internodiis brevibus 1-3, raro 6 cent. longis, nodis crassis. Petioli ½-1 cent. longi antice canaliculati. Folia 6-9 cent. longa, 2½-4 lata, lateribus antrorsum conniventibus, nervis tenuibus fuscescentibus ? venis tenuissimis. Stipulæ oppositifoliæ coriaceæ lineari-lanceolatæ acuminatissimæ canaliculatæ 1½ cent. fere longæ. Pedunculi 1 cent. circiter longi. Amenta juniora 2-4 cent. longa, pennam columbinam crassa, sursum parum attenuata, obtusa.

PIPER, *Linn.*

distincta foliorum forma, crassitie, nervatione, filamentis versus apicem in marginem circularem incrassatis.

Frutex ramosissimus, an scandens? rami teretiusculi nodosi; ramuli (fuscescentes?) angulati. Petioli antice canaliculati ½-1½ cent. longi, cum lamina angulum sistentes; folia 6-8 cent. longa, 3-2 lata, subæquilatera, sed basi haud æqualia, summa angustiora lanceolato-ovata, reliqua ovata, supra secundum nervos et vetustiora etiam secundum venas profunde sulcata et iis subtus prominentibus lacunosa, marginibus revoluta rigida; nervo medio ad apicem ducto, duobus mediis fere ad eum percurrentibus. Amenta fœminea pedunculis 5-12 mm. longis sustenta, florentia 2-4 cent. longa, baccifera vix longiora. Rachis hirta; bracteæ extus subtusque glabræ ad insertionem hirtellæ, coriaceæ. Ovarium ovatum vel subglobosum glabrum, stigmatibus 4-5. Baccæ globosæ, apice cicatrisatæ, 5 mm. in diam. Amenta masculina paullo brevius pedunculata et ipsa plerumque paullo breviora. Antheræ longiuscule exsertæ ovatæ vel globosæ, biloculares, filamento marginatim dilatato sustentæ.

Forma *major ?* foliis oblongis (8-10 cent. longis, 4-4½ latis) amentis masc. longioribus (10 cent.)—Mayaburan, (*Sir F. Adam.*)

3. P. *Hookeri*; ramulis petiolis pedunculis foliisque junioribus subtus in nervis hirtellis, his coriaceo-membranaceis pellucido-punctatis supra glabris ovatis æquilateris breviter acuminatis, acumine obtuso, basi æquali-cordatis vel rotundatis septem vel nervis 3 mediis paullo supra basin liberis subseptupli-vel noveno-nerviis, pedunculo petiolum (amento fœm. folium) superante, bracteis oblongis decurrenti-adnatis subtus sparse hirtellis cito glabratis, ovario ovato, stigmatibus 4 brevibus crassis puberulis.

HAB. Bombay, (*Lambert.*) Ex affinitate P. *attenuati*, sed statura majore, foliorum nervatione et stigmatibus plane diversum.

Ramuli angulosi tenuiter striati pubescenti-hirtelli. Petioli teretes hirtelli 5-10 mm. longi. Folia 8-10 cent. longa, 4-6½ lata; nervis subtus prominentes, 3 medii ad apicem ducti, adstantes per anastomoses fere eo usque continuati, reliqui tenues, anastomoses subhorizontales prominulæ. Stipulæ oppositifoliæ deciduæ lineares puberulæ petiolo breviores. Pedunculi 1¼ cent. amenta baccifera 8 cent. longa.

4. P. *nigrum*, p. 308.—Ceylon, (*Walker*, n. 1397), in Cayenna cult., (*Martin.*)

5. P. *trioicum*, p. 310. Assam, Madras ex Madura sub nomine P. *nigri*, *Mool lagoo* indigenis dictum, stirps mater P. *albi off.* ex teste schedula eadem etiam quæ in Malabaria ad P. *album* colligendum colitur, (*Griffith.*)

6. P. *sylvestre*, p. 314, *mas.* Mauritius (*Barclay*,) *fœm.*? (Ceylon, *Walker*;) folia paullo majora, ovata basi vix inæquali-rotundata, 8-11 cent. longa, 4½-6½ lata, nervo laterali uno vel 2 paullo supra basin liberis. Pedunculi 1⅔-2 cent. longi, amenta 10-12. Bracteæ ut in mare, stigmata 4-5 linearia acuta reflexa.

7. P. *Nepalense*, p. 318, Khasiya, (*Griffith*;) folia paullo crassiora et fortius reticulata.

8. P. *arborescens*, p. 320. Java, (*Zollinger*, n. 915.)

9. P. *nigrescens*, p. 325. Java, (*Zollinger*, 875.)

In specimine suppetente folia superiora basi obtusa vel acuta. Amentum hermaphroditum pedunculo 1-2 cent. longo filiformibus longissimis remotifloris dioicis, bracteis elongatis decurrentibus intus hirtis, stigmatibus 3 crassis brevi-lanceolatis acutis.

Ceylon, (*Walker.*)

P. *argyrophyllo* et P. *Lonchite* affine, sed nervis 7 iisque multo altius liberis tuto distinguendum.—Rami teretiusculi striulati, nodosi, ramuli angulati glabri. Petioli (foliorum superiorum) 1 cent. circiter longi; folia 8½-10¼ cent. longa, 2½-4 lata, supra nervis canaliculata, hi subtus prominentes, laterales quatuor inferiores e basi orti eorumque infimus tenuissimus submarginalis, secundus ad ⅓ vel supra ⅓ alt. ductus, 2 superiores ad ¾ vel ⅔ alt. alternatim e nervo medio prodeuntes ad apicem ducti; anastomoses vix conspicuæ, in vetustioribus subprominulæ; margines leviter revoluti. Pedunculi 1-1½ cent. longi, amenta deflorata 12-15 cent. Bracteæ et ovaria fere ut in P. *nigro*. Bracteæ coriaceæ fuscæ marginibus pallidæ oblongæ secundum longitudinem adnatæ, marginibus et utroque apice liberæ, his erectis alveolos sistentibus; extus glabræ, subtus hirtellæ. Ovarium ellipticum. Baccæ immaturæ ovatæ acutiusculæ cicatrisatæ.

12. P.? *Chinense*; glabrum, ramulis flexuosis, foliis modice petiolatis tenuiter membranaceis epunctatis venis pellucidis ovato-vel lato-ellipticis subinæquilateris acute acuminatis basi latis ima acutiusculis, 5-nerviis, nervis tenuissimis, medio ad apicem ducto, lateralibus 2 per anastomoses ad eum continuatis, pedunculo petiolum circiter æquante, amentis cylindricis densifloris hermaphroditis, bracteis clavato-peltatis? marcescentibus, ovario ovato, stigmatibus 3 brevibus erectis staminibus duobus vel pluribus? ovario circumpositis, antheris bilocularibus, filamentis basi adnatis partim persistentibus, baccis ovatis acutis stigmatum rudimentis coronatis.

China (*Millett*).

Piperacea admodum singularis, *Enckeam* quandam densifloram referens, in genere prorsus dubia e meliore specimine olim accuratius examinanda.

Ramuli inferne teretiusculi, superne angulati glabri, flexuosi, nodosi, internodiis 3 cent. longis. Petioli 1 cent. longi; folia tenuissime membranacea æquilatera vel plus minus inæquilatera 11-13 cent. longa, 5-7 lata, nervis tenuissimis, anastomosibus horizontalibus reticulatis haud prominulis. Stipula oppositifolia parva lineari-convoluta glabra. Pedunculi 1 cent. longi; amenta in sicco nigricantia 4 cent. longa secta, pennam passerinam crassa; baccæ confertæ basi subcohærentes, filamentis rudimentariis verrucæformibus circumdatæ. Bracteæ parvæ clavatæ apice subpeltatim dilatatæ glabræ? nunc certe pro parte delitescentes. Antheræ biloculares ovatæ fuscæ. Stigmata 3 brevia obtusiuscula puberula.

ENCKEA, *Kunth.*

1. E. *lævigata*, *l. c. p.* 348.—In Peruvia (*Mathews*, n. 1708).
2. E. *species*, *e Sect. I*, haud determinanda, affinis E. *smilacifoliæ*.—Trinidad (*de Schach*). Folia ovata basi cordata vel truncata, apice in acumen breve desinentia, 20-27 cent. longa, 11-16 lata, septemnervia, nervis subtus prominentibus, venis parallelis prominentibus et reticulatis conjunctis, coriaceo-membranacea subepunctata glabra, petiolis 4½-2 cent. longis crassis.—Hæc eadem videtur ac P. *decumanum*, *Willd. Herb.* n. 693. (conf. *Syst. Piper*, p. 352.)
3. E. *glaucescens*, p. 354. Mexico, Chile in ditione de Puebla

tibus vel superantibus confertifloris, bracteis spathulato-conchæformibus hirtis, ovario elliptico, stigmatibus 4 brevibus recurvis, baccis globoso-ellipticis subtetragonis.

Hab. America centralis, (*Barclay.*)

E. *ceanothifoliæ* nec non E. *stipulaceæ* accedens, facili negotio autem distinguenda.

Petioli inferiores 3⅓ cent. longi; folia 11-12 cent. longa, 8⅓-10 lata, acumine brevi plerumque obtuso mucronato, nervis subtus prominentibus medio ad apicem ducto, lateralibus 2 per anastomoses, reliquis brevissimis præsertim versus margines reticulatis; pili sparsi subtus persistentes. Folia media basi plerumque truncata; summa petiolis ½-1 cent. longis sustenta, 5-7 cent. longa, 3½-4½ lata. Petioli (ut et pedunculi) subretrorse hirtelli ½-1 cent. longi. Amenta florentia erecta teretia recta 5-8 cent. longa densiflora. Stamina 4? filamentis brevibus, antheris bilocularibus ovatis; fructifera 6-9 cent. longa, baccis distinctis et ob flores plures haud fœcundos subremotis, ovatis. Stigmata 4 brevia ovata puberula serius decidua.

Peltobryon, *Klotzsch.*

1. P. *Mathewsii*; ramulis pedunculis petiolis foliisque subtus in nervis primariis tenerrime puberulis cito glabratis, his membranaceis subepunctatis subtus glandulosis ovato-oblongis vel subovatis acuminatis acumine lineari-lanceolato subfalcato acutissimo, basi lato-rotundata subæquali in petiolum protracta, costulis majusculis usque ad ⅔ alt. circiter 6-8patulo-adscendentibus, amentis folio ½ brevioribus cylindricis rectis, pedunculo petiolo breviore vel subæquali, bracteis conchæformi-peltatis hirtellis deciduis, stylo filiformi ovarium superante, stigmatibus 3 linearibus patulis.

Crescit in Peruvia, (*Mathews*, n. 1710).

A P. *calloso* et *Pœppigii*, quibus foliorum forma aliquaternus accedit, amentis longioribus et facile styli filiformis longitudine distinguitur. Petioli 15-8 mm. longi tenues antice canaliculati basi dilatati nodum amplectentes cito glabrati. Folia utrinque saturate viridia, subtus vix pallidiora, membranacea, subtus minute glanduloso-punctata in nervo et venis primariis pilis tenerrimis inspersa, 9-15 cent. longa, 4⅔-6 lata, basi lato-rotundata, ima secus petiolum quidquam protracta, æquilatera, apice tantum obliqua, costulis venosis primariis e nervo medio tenui utrinque usque ad ⅔ alt., circiter 6 vel 8 patulis versus margines adscendentibus, aliisque magis horizontalibus tenuibus, omnibus tenuissime anastomosantibus, suprema utrinque per anastomoses fere ad apicem ducta. Pedunculi 5-7 mm. longi, amenta 6-7 cent. recta pennam gallinaceam tenuiorem crassa, suboblique rostellata, stylisque exsertis subhirta. Bracteæ pedicellatæ conchæformi-peltatæ hirtæ, sed in florentibus et bacciferis amentis fere omnes deciduæ. Stamina decidua. Ovarium obpyramidatum 3-5-gonum apice lato-rotundatum, stylo toto filiformi 2 mm. æquante, stigmatibus intus puberulis. Baccæ glabræ vertice umbonatæ plerumque stylo coronatæ.

2. P. *Hookeri;* glabrum, ramulis resinoso-glandulosis, foliis membranaceis pellucido-punctatis, utrinque præsertim subtus glandulis hemisphæricis nitidis inspersis, oblongis vel sublanceolato-oblongis brevi-acuminatis; acumine acuto vel obtusiusculo, basi leviter inæquali attenuato-acutis costis utrinque per totam longitudinem circiter 12 patulis

a basi pertingente indeque attenuata, acuta, basi subæqualia, venis primariis 11-12; 20-25 cent. longa, 7-10 lata. Stipula oppositifolia decidua coriaceo-scariosa striata glabra oblongo-lanceolata 2 cent. longa (adeoque ab illa P. *attenuati* valde diversa). Amenta patula pedunculis 1 cent. longis crassis suffulta, 4-5½ cent. longa, 1 cent. crassa et crassiora, obtusissima, basi ob flores steriles attenuata, cæterum nunc baccifera. Baccæ obovatæ leviter angulatæ discretæ, stylo pyramidali crasso rostratæ vel hoc deciduo cicatrisatæ.

NEMATANTHERA, *Miq. in Linnæa, Tom. XVIII.*

1. N. *Guianensis, Miq. l. c.*—Omnium hujus tribus generum maxime singulare.

Crescit in Surinam (*Hostmann* n. 10). Folia paullo majora quam in specimine l. c. a me descripto, scil. 11-16 cent. longa.

ARTANTHE, *Miq.*

Sectio NHANDI, *Miq.*

1. A. *caudata, l. c. p.* 380.—Pernambuco (*Gardner*). Chinchao Peruviæ (ex Herb. *Ruiz* et *Pav.* n. 271), Trinidad.
2. A. *catalpæfolia,* p. 388.—Brasilia (*Swainson*). Trinidad (*de Schach*).
3. A. *sororia*; ramulis petiolis foliisque utrinque præter margines dense appresse hirtellos imamque basin juniorum glabris, his longe petiolatis pellucido-punctatis lato-ovatis abrupte et acute acuminatis, basi concavo-truncatis vel repando-cordatis, novemnerviis, petiolis anguste ad ⅜ circiter alt. alulatis, amentis breviter pedunculatis leviter curvatis folium subæquantibus, bracteis peltatis villoso-ciliatis.

Crescit in Peruvia ad Chinchao (a. 1795, *Ruiz* et *Pavon* n. 271). America centralis (*Barclay*).

Duabus præcedentibus valde affinis, sed foliorum forma statim discernenda. Ramuli teretiusculi striati glabri nodosi.

Petioli 3-5 cent. longi glabri utrinque alati, alis ad basin paullo dilatatis cæterum angustissimis, supra ½ alt. evanescentibus. Folia tenuiter membranacea pellucido-punctata supra atroviridia opaca glabra præter imam basin juniorum interdum tenere pubescentem, subtus pallida subnitida, nervis prominentibus et parcis anastomosibus prominulis pertensa, lato-ovata abrupte anguste oblique vel recte acuminata, æquilatera, basi lata concava vix subcordata, secus margines pilis appressis densis brevibus instructa 14-17 cent. longa, 11-13 lata; nervi omnes e basi, 3 medii ad apicem ducti. Pedunculi 5 mm. longi, amenta 11 cent., leviter curvata, heic juniora. Genitalia ab iis A. *caudatæ* vix differre videntur, sed bractearum area centralis nuda fusca glandulosa.

4. A. *Ruiziana*; glabra, foliis breviter petiolatis rigide membranaceis epunctatis rotundato-ovatis, summis lato-ovatis, æquilateris vel inæquilateris subabrupte brevi-acuminatis acumine obtuso, basi lato-truncatis vel summis rotundatis 9-vel sub-7-nerviis, nervis 5 mediis fere ad apicem ductis, pedunculo petiolum subæquante, amentis brevibus rectis teretibus, bracteis conchæformi-cucullatis glabriusculis, stigmatibus 4-5 recurvis.

Crescit in Peruviæ nemoribus ad Pangoa, m. Jul. (*Mathews*, n. 1143.)

glabriuscula 1 cent. longa. Pedunculi 1-1½ cent., amenta 4½-5½ cent. longa recta, pro planta tenuia. Bracteæ parvæ conchæformes glabriusculæ? vertice subpeltatæ? hic valde corrugatæ. Ovarium obovatum glabrum, stigmata plerumque 4 vel 5, crassiuscula, brevi-acuta minutissima puberula. Stamina quot? filamenta superne incrassata, antheræ subglobosæ. Folia inf. iis *Enckeæ smilacifoliæ* vel *speciei dubiæ* supra memoratæ valde similia.

5. A. *scutata*, glabra, petiolis basi vaginantibus usque ad ½ alt. coriaceo-alatis, foliis membranaceis pellucido-punctatis ovatis æquilateris apice abrupte falcatim acuminatis, acumine angusto obtusiusculo, paullo supra basin peltatis, hac leviter cordata æquali, nervis e basi et e nervo medio usque ad ½ alt. ortis 15-17-plinerviis, 3 mediis ad apicem ductis, amentis pedunculatis densifloris, folium æquantibus?

Crescit in Peruvia, (*Mathews*, n. 1700).

Species admodum distincta, attamen ob genitalia in suppetente specimine haud investiganda, ulterius recognoscenda. Ramuli angulati glabri. Petioli 9 cent. longi, ala utrinque stipulacea acuti, quæ striata glabra. Folium adultum 26 cent. longum, 21½ latum, utrinque læve nitidum, subtus pallidius, supra nervis pertensum, anastomosibus transversis parum prominulis. Nervatio talis, ut folium utrinque 7-8 costatum dici posset. Costæ 4 superiores alte arcuatim versus margines adscendunt, suprema vel 2 superiores ad apicem. Petiolus ad 3 cent. a basi insertus. Stipula oppositifolia coriacea glabra convoluta. Amentum adest junius, 10 cent. longum cylindricum, pedunculo 2 cent. longo sustentum.

Sectio MACROSTACHYS, *Miq.*

6. A. *magnifica*, *l. c. p.* 391. Peruvia (*Mathews*, n. 1699.)

7. A. *richardiæfolia*, p. 395.—In sylvis umbrosis montium Organensium (*Gardner*, n. 623. Frutex 6-ped.)

8. A. *coccoloboides*, p. 397. Serra de Mendanha Brasiliæ

(*Gardner*, n. 5185). Frutex 6-ped. Folium juvenile supra molliter pubescens; cæterum congruit.

9. A. *Lessertiana*, p. 405. Varietas foliis apice attenuato-acutis ipso obtusis, costis utrinque 12 et pluribus. Differt habitu etiam parumper a speciminibus Swartzianis et Leprieurianis olim a me descriptis, speciem tamen sistere non videtur. Jamaica, (*Purdie*).

Sectio CHURUMAYU, *Miq.*

10. A. *Hookeriana*; ramulis pedunculis petiolis foliisque utrinque glabris, his membranaceis pellucido-punctatis subinæquilateraliter lato-ovatis acuminatis, acumine brevi-lanceolato acuto, basi leviter inæquali truncato vel subcordato-rotundatis, costis e basi et supra eam ad $\frac{1}{3}$ vel $\frac{1}{2}$ alt. utrinque 4-5, noveno-vel undeno-nerviis, amentis breviter pedunculatis brevibus cylindricis acutis densifloris, bracteis peltatis semiorbiculari-triangularibus villoso-ciliatis, area centrali nuda subrotunda, ovario in stylum brevem attenuato, stigmatibus 3 lanceolatis.

Crescit in Peruvia ad Serruja, Chachapoyas, (*Mathews*, n. 3222).

Species valde distincta cum sola A. *Enckeoide* comparanda. Rami ramulique striati angulati sensim teretiusculi, inter-villoso ciliato ubtriangulari, area centrali nuda verruculoso-fusca semiorbiculari-vel triangulari-rotundata. Ovarium glabrum.

11. A. *Endlicheriana;* ramulis junioribus petiolis postice foliis subtus in nervis primariis quam tenerrime puberulis cito glabratis, his coriaceo-membranaceis pellucido punctatis supra glabris utrinque glandulis fuscis inspersis ovato-subdeltoideis attenuatis acuminatis inæquilateris, basi subæquali leviter cordatis vel truncatis, costis e basi et usque ¼ alt. utrinque 5-6 11-13-plinerviis, nervis 3 mediis ad apicem ductis, pedunculis appresse hirtellis petiolo ⅓ brevioribus, amentis rectis folio subbrevioribus, bracteis pedicellato-peltatis, peltæ margine lato-membranaceo lacero-ciliolato, ovario in stylum attenuato, stigmatibus 4 lineari-lanceolatis recurvatis.

Crescit in Peruvia, (*Mathews,* n. 1698).

Petioli basi dilatata amplexicaules, antice profunde canaliculati, stipulis petiolaribus diutius adhærentibus sensim cicatrisatis, 1 fere 2 cent. longi. Folia e basi ovata aliquatenus inæquilateraliter deltata sursum regulariter attenuata et in acumen breve obtusiusculum terminata, 20-22 cent. longa, 9-10⅓ lata, præsertim in parte ⅓ inf. inæquilatera; nervi 4-5 utrinque e basi; reliqui supra basin liberi fortiores alte adscendentes, subtus prominentes, anastomosibus remotis tenuibus prominulis. Pedunculi 8 mm., amenta 12 cent. longa, recta, 2-3 mm. crassa; flores subspiraliter dispositi. Bractearum pelta subrotunda vel subtriangularis, area centrali fusca crassiuscula, margine extenuato lutescente. Filamenta teretia, antheræ ovatæ cordatæ pallidæ. Ab A. *Hookeriana* foliis sursum valde attenuatis, nervatione et amentis longioribus statim distinguitur.

12. A. *Benthamiana;* glabra, foliis coriaceo-membranaceis pellucido-punctatis inæquilateraliter ovato-oblongis longe et anguste acuminatis basi leviter inæquali-rotundatis, costis majoribus utrinque pluribus, inferioribus 4-5 e basi vel basi proximis fortiusculis adscendentibus, reliquis superioribus tenuioribus magis patulis, summa apici proxima

in acumen continuata, pedunculo petiolum circiter æquante, amentis cylindricis rectis folio multo brevioribus, bracteis conchæformibus basi hirtis apice tuberculato-subpeltatis (glabris ?)

HAB. Caraccas, (*Linden*, n. 216).

A præcedentibus nec non ab A. *grandifolia* et affinibus foliorum nervatione haud difficili negotio discernitur. Petioli trigono-semiteretes, antice canaliculati 2-1 cent. longi. Folia 20-25 cent., 8-11½ lata, versus basin perspicue inæquilatera, latere latiore ½ cent. ad basin longiore et costis 1-2 extraordinariis prædito. Costæ majores 4-5 utrinque e basi adscendentes fortiores et intervallo distincto a costis superioribus separatæ; hæ plures 10-12 magis patulæ magisque arcuatæ; omnes prominentes sparse anastomosantes. Margines leviter revoluti. Stipula oppositifolia decidua 1⅔ cent. longa lineari-convoluta glabriuscula. Pedunculi 1⅔, amenta 6 cent. longa, recta pennam corvinam crassa obtusa juniora. Genitalia haud bene distincta. Bractearum virginalium apex tuberculiformis subtriangularis, vix glaber.

13. A. *Schachii*; glabra, foliis membranaceis pellucido-punctatis, inferioribus lato-ovatis oblique acuteque acuminatis subæquilateris basi lato-rotundatis, infra ⅓ alt. noveno-nerviis et superne patulo-venosis, superioribus ellipticis

quarum summa usque ad apicem ducta. Anastomoses tenues. Folia superiora 15-17 cent. longa, 6-8½ lata, costis 2-3 utrinque e basi quarta paullo altius libera. Stipula oppositifolia decidua linearis convoluta subcurvata 1 cent. paullo superans. Pedunculi 5-6 mm., amenta 5-7 cent. longa, 2 mm. crassa, adspectus griseo-pubescentis.

14. A. *Selloviana*, p. 416? Cumana (*Funcke*, n. 674).

15. A. *Miersiana*; ramulis petiolis pedunculisque appresse subretrorse hirto-pubescentibus, foliis coriaceis sparse pellucido-punctatis, supra tenerrime puberulis nervisque sulcatis, subtus sublacunosis incanis pubescenti-tomentosis pilis supra nervos densioribus oblique ovatis acuminatis acumine acutiusculo mucronulato, basi leviter inæquali rotundatis vel subcordatis, 5-7-plinerviis, nervis 3 mediis ad ¼ alt. solutis, reliquis e basi pedunculo petiolum bis terve superante, amentis cylindricis brevibus obtusis, bracteis pedicellato-peltatis subrotundatis croceo-ciliato-hirtis, area centrali nuda glandulosa, staminibus 4? infimo bracteæ opposito, baccis obpyramidatis vertice subtruncato-umbilicatis.

Hab. Peruvia, in Chachapoyas, (*Mathews*, n. 186.)

Species A. *Andicolæ* accedens, certe A. *albidæ*, p. 415 affinis, que tamen secundum descriptionem a *cl. Kunth* datam quibusdam notis differre videtur.

Frutex. Rami teretes nodosi appresse pubescentes, internodiis 2-5 cent. longis; ramuli dichotomi dense tomentoso-hirti, tomento sordide ochraceo. Petioli 4-10 mm. longi, antice canaliculati. Folia in sicco supra sordide fusca, nervis venisque canaliculata, attamen lævia, sub lente pilis teneris inspersa, subtus ochraceo-incana, molliter tomentoso-pubescentia, pilis supra nervos longioribus, plus minus inæquilateraliter ovata, acuminata, acumine lanceolato-lineari sursum attenuato acuto mucronulato, marginibus revolutis, basi subattenuata leviter inæquali plerumque rotundata aut aliquid excisa, 5-6 cent. longa, 3 cent. ad ⅓ alt. circiter lata, nervis subtus prominentibus medio ad apicem ducto, e basi utrinque uno majore et sæpe altero ad imam basin tenui, tertius remotius a basi ortus extrorsum dichotomus, per anastomoses ad apicem fere continuatus, omnes anastomosibus prominentibus juncti. Stipula oppositifolia decidua lanceolata carinata leviter curvata hirtella petiolum circiter æquans. Pedunculi 1-1½ cent. longi, amenta fere matura 3-4 cent. longa, calamum scriptorium crassa recta obtusa suberecta, in sicco nigricantia. Baccæ obpyramidatæ tri-polygonæ, glabræ, stigmatum 3-4 lanceolatorum longiusculorum basi coalitorum cicatrice notatæ. Antheræ parvæ. Bracteæ persistentes.

16. A. *Andicola?* p. 415.—Cum specimen authenticum non viderim, in tanta affinium specierum copia determinationem certam habere vix audeo.

Crescit in Peruviæ Prov. Serruja; Chachapoyas, (*Mathews*, n. 3225.)

Ramuli fusco-tomentoso-pubescentes. Petioli 1-2 cent. longi antice canaliculati basi nodum marginantes pubescentes. Folia submembranacea lato-ovata attenuato-acuminata, acumine brevi obtusiusculo, basi inæquali cordata, lobis conniventibus petiolum tegentibus, 11-11½ cent. longa, 7-7½ lata, noveno-nervia si nervos infimos tenuissimos adnumeres, nervis 5 mediis paullo supra basin solutis, reliquis ex ipsa basi egressis, medio ad apicem, 2 superioribus fere ad eum ductis, supra molliter pubescentia, usque ad ⅓ alt. utrinque 6 adscendentibus, petiolis versus basin subvaginantibus pedunculum bis terve superantibus, amentis crassis cylindricis rostellato-acutis rectiusculis folio paullo brevioribus, bracteis conchæformi-peltatis ochraceo-hirtis, stigmatibus longiusculis, antheris ovato-oblongis.

Crescit in Peruvia ad Quebrada in Pariahuanca, (*Mathews*, n. 793.)

Ramuli teretiusculi sensim glabrati, juniores molliter pubescentes subochracei, internodiis 5-8 cent. longis. Nodi marginati. Petioli 2-2½ cent. longi, antice profunde canaliculati basi dilatati, antice e stipulis petiolaribus deciduis cicatrisati, cæterum dense pubescentes. Folia 13-14 cent. longa, 8-9½ lata, æquilatera, attenuato-acuminata, acumine acutiusculo, basi æqualia vel subæqualia, nervis fere infra ⅓ alt. ortis multiplinervia, 3 mediis ad apicem ductis, inferioribus utrinque 4 fere e basi exortis, omnibus subtus prominentibus, anastomosibus tenuibus. Stipula oppositifolia coriacea oblonga acutiuscula subconvoluta hirtella 2 cent. longa. Pedunculi crassi dense hirti 5 mm. longi, amenta 9-10 cent. longa, calamum scriptorium crassa; antheræ supra bracteas exsertæ. Bractearum area centralis exigua nuda, cæterum dense hirtæ vertice subtriangulares.

18. A. *alpina*; ramulis foliis utrinque pedunculisque glabris, petiolis junioribus antice tenere ciliolatis cito glabratis, foliis submembranaceis glandulis venulisque pellucidis, ovatis vel elliptico-ovatis attenuato-subacuminatis apice ipso obtuso, plus minus inæquilateris, basi leviter inæquali rotundatis, septupli- vix novem-nerviis, pedunculo petiolum superante, amentis patulis crassis rectis obtusis folium superantibus vel fere æquantibus, bracteis pedicellato-peltatis, pelta suborbiculari vel triangulari flavo-hirto-ciliata area orbiculari nuda, stigmatibus 3 lanceolatis.

Crescit in monte Pichincha, 10,000 pedum. alt. (*Hall.*)

Habitu A. *cinnamomifoliam*, p. 419, quodammodo referens, sed nervatione foliorum et bracteis cæt. perfacile distinguenda.

Rami dichotomi, ramuli angulati glabri. Petioli ⅓- fere

1 cent. longi, antice canaliculati, ima basi nodum marginantes, nascentes marginibus tenere ciliolati mox glabrati. Folia utrinque glabra, supra opaca, subtus pallida, nascentia hic illic uno alterove pilo instructa, venis pariter ac glandulis pellucidis, plerumque elliptico-ovata et plus minus inæquilatera attenuato-acuminata, acumine apiceve ipso obtuso, raro acutiusculo, basi leviter inæquali-rotundata raro leviter excisa, nervo medio percurrente utrinque usque ad ¼ alt. a basi costulas 3 vel cum una basilari tenuissima 4 emittente prominentes versus margines adscendentes, aliquasque tenuiores superne, nulla ad apicem ducta, omnes parce et obsolete anastomosantes; 5-7 cent. longa, 3-3½ lata. Pedunculi crassi angulati 1½-2 cent. longi; amenta matura 3-6 cent. longa recta obtusa, calamum scriptorium crassa; flores annulatim dispositi. Bracteæ peltæ area centralis demum fere omnino rotunda elevata verruculosa, ambitus e pilis subluteis primum subtriangulari-semilunaris demum fere orbicularis. Baccæ obpyramidatæ polygonæ vertice truncatæ. Stamina 3. ?

19. A. *macrophylla*, p. 423, *forma* foliis subtus densius hirtellis, amentis (3-4 cent.) brevibus rostratis. Vix species. St. Vincent, (*Guilding*.)

Crescit in Peruvia, (*Mathews*, n. 1716.)

Species spectabilis admodum distincta, sed ob folia fere æquilatera a contribualibus quodammodo recedens.

Ramuli angulati, nascentes hirsuti, provectiores pilis partim deciduis partim rigescentibus scabrido-hirti. Petioli 1-1½ cent. longi teretiusculi antice vix canaliculati hirto-tomentosi. Folia 18-20 cent. longa, 6-9 lata, apice brevi-acuminata, acumine obtuso submucronato recto vel parumper obliquo, marginibus leviter revoluta, basi obtusa, raro aliquantulum acutiuscula, costis utrinque 8, prope basin approximatis, 2 superioribus ad apicem ductis, omnibus supra impressis; pagina superior anastomosibus impressis areolata, inque iis pilis sparsis rigidis asperrima. Stipula oppositifolia decidua lanceolata carinato-falcata coriacea pubescens, intus hirsuta, 1½-2 cent. longa. Stipulæ petiolares pro parte persistentes margine ciliato et hirto nodos ambientes. Pedunculi 3-3½ cent. longi. Amenta 14-20 cent. longa, 8 mm. crassa, cylindrica, obtusa, tomento tota fuliginea. Stamina 4? filamenta teretia, superne subpuberula? Antheræ biloculares ovatæ subcordatæ.

22. A. *Lindeniana*; ramulis petiolis pedunculis foliisque subtus in nervis venulisque incano-hirtis, his subcoriaceis pellucidos punctatis, nascentibus supra in nervis primariis pilosulis cito glabratis demum areolato-bullatis lævibus, subtus lacunosis sensim scabrescentibus ovato-ellipticis æquilateris acute acuminatis acumine mucronato, basi inæquilaterali subæquali rotundatis leviter excisis, costis majoribus utrinque circiter 6 patulo-adscendentibus, nulla ad apicem ducta, omnibus lacunoso-reticulatis, pedunculo petiolum circiter æquante, amentis cylindricis obtusis brevimucronatis folio brevioribus, bracteis pedicellato-peltatis triangularibus griseo-hirto-ciliatis.

Hab. Nova Granada. (*Linden*, n. 839.)

Species in sectione quodammodo heterogenea, sed ob folia lacunosa scabrescentia et bracteas huic sectioni aptior quam reliquis.

Rami teretes scabro-pubescentes nodosi; ramuli angulati;

dense hirti. Petioli basi vaginantes antice canaliculati dense hirti 2-1 cent. longi; stipulis petiolaribus serius deciduis scariosis. Folia 9-12 cent. longa, 4½-6 lata, sicca molliter coriacea, supra atroviridia opaca, adulta valde areolata, areolis tetra-penta- vel polygonis sulcis profundis separatis, subtus cinerascentia dense hirta, pilis supra nervos et anastomoses sensim deciduis scabrida, ad lentem punctata. Stipula oppositifolia decidua lanceolato-oblonga acuta carinata, 2 cent. longa, præsertim deorsum dense appresse cano-hirta. Pedunculi tenues 1-1½ cent. longi; amenta juniora griseo-hirtella 4-4½ cent. longa, pennam corvinam crassa. Bracteæ area centralis nuda oblonga vel triangularis, glandulosa, cæterum griseo-hirta.

23. A. *areolata*; ramulis petiolis pedunculis foliisque subtus in nervis venisque sparse longe et patentim hirtis, foliis longe petiolatis coriaceis pellucido-punctatis, supra præter basin nervi medii, glabris areolatis demum areolato-bullatis, subtus fusco-punctatis lacunosis, ovatis attenuato-acuminatis subæquilateris, basi in aliis æquali in aliis inæquali-rotundatis, costis infra ⅓ alt. utrinque 5 (infimis 2 subtilissimis, reliquis 3 superioribus majusculis,) nulla ad apicem ducta, pedunculo petiolum bis terve superante, amentis cylindricis rectiusculis vel leviter curvatis pedunculo brevioribus vel longioribus, bracteis conchæformi-peltatis, area

margini ipso adspectus crenulatus imprimitur, juniora marginibus ciliata, basi in nervo medio pilosula, hoc demum dilatato lutescenti-excorticato, subtus pallida juniora reticulata, adulta lacunosa in venis et costis sparse hirta, sub lente punctata. Stipula oppositifolia lanceolato-carinata hirta 1 cent. circiter longa. Pedunculi patentim hirti 4½-5½ cent. longi. Amenta 5-12 cent. longa, cylindrica calamum scriptorium crassa, obtusa vel sterili-acutata, in sicca sordide fuscescentia, plerumque plus minus curvata. Flores densissimi. Bracteæ conchæformi-subpeltatæ sed in sicco ægre distinguendæ. Baccæ immaturæ glabræ obpyramidatæ basi cuneatæ, stigmatibus 3 lanceolatis longiusculis puberulis. Stamina longiuscula, filamentis teretibus exsertis, antheræ parvæ subglobosæ biloculares sordide lutescentes.

24. A. *acutifolia*, p. 428. Forma *minor* quam specimina Ruiziana olim descripta.—Peruvia in prov. Huanuco et Pariahuanca ad ripas fluminum, (*Mathews*, n. 795, n. 1715), in Chachapoyas, (*idem*, n. 187.)

25. A. *crocata*, p. 429; pedunculi (1 cent. longi) petiolum æquantes;—nulla alia autem differentia a sp. Ruizianis. *Crescit* in Peruvia, (*Mathews*, n. 1711 *vel* 1712.)

26. A. *salviæfolia?* p. 430. Ad Huanuco et Pariahuanca Peruviæ, (*Mathews*, n. 794.) Foliis tantum longioribus a sp. meis recedens.

Alia species, ab A. *salvæfolia* recedens; foliis basi acutis, sed ob amenta nimis juvenilia haud tuto extricando, a cl. *Mathews* ad Serruja, Chachapoyas lecta, (n. 3224.)

27. A. *verbascifolia*, p. 431, *var.* foliis basi minus inæqualibus et minus profunde excisis. Quito, (*Jameson*, n. 61.)

28. A. *lanceæfolia*, p. 433.—In Peruvia legit *Mathews*, specimina foliis majoribus 20-24 cent. longis, 4½-6½ latis. Formam amentis paullo longioribus 9-10 cent. in Nova Granada cl. *Linden*, n. 976.

29. A. *elongata*, p. 434. Columbia, (*Hartweg*, n. 1396.) Ejusdem *forma latifolia?* Peruvia, (*Mathews*, n. 1706.) Folia multo latiora 20-25 cent. longa, 7½-9 lata; petioli 1 cent. longi.

30. A. *granulosa*, p. 435. In Peruvia, Prov. Mozobamba, (*Mathews*, n. 188.)

31. A. *Pœppigii*, p. 437. Peruvia, (*Mathews*, 1693). Forma glabrior, (*idem*, n. 1705.)

32. A. *asperifolia*, p. 441. In Peruviæ nemoribus ad Pangoa, (*Mathews*, n. 1146,) ibidem, (n. 1145 *bis*.)

33. A. *Jalapensis*, p. 444. Folia quædam 20 cent. longa, 9 lata, basi valde inæqualia. Certa bona species, Mexico, (*Galeotti.*)

34. A. *hirsuta*, p. 446. Folia suprema fere lanceolata 14 cent. longa, 4-4½ lata; infima 25 cent. longa, 10 lata, utrinque ad ½ alt. 8-costata. In vallibus umbrosis insulæ *Trinidad*, (*Purdie.*)

35. A. *scabra*, p. 447, *var*. foliis minoribus 10-12 cent. longis. *Jamaica*, (Purdie.)

36. A. *adunca*, p. 449. In Jamaica valde vulgaris, (n. 137,) in Trinidad, (*Lockhart*.)—Forma *angustifolia*, Essequebo, (*Schomb.* n. 1.)—Specimen Peruvianum, (Serruja, Chachapoyas, *Mathews*, n. 3225), habitu A. *granulosæ* simile, ramulis petiolis pedunculis junioribus molliter pubescentibus, foliis brevissime petiolatis cæt. Anne species?

37. A. *gracilis?* p. 448. San Carlos, Peruviæ, (*Mathews*, n. 1695.) Descriptio brevior Floræ Peruvianæ cum speciminibus satis congrua, nec tamen ideo in hac sectione

punctatis, junioribus supra in nervis puberulis, cæterum pilis rigidis minutissimis asperrimis, quibus deciduis punctatis, subtus pallidis glanduloso-punctatis scabridis, oblongis, adultis subæquilateris acuminatis, basi subæquali acutis, costis ad ½ alt. utrinque 5, amentis folio subbrevioribus cylindricis rectis vel flexuosis acutis, bracteis pedicellato-peltatis ochraceo-villosulis.

Crescit in Peruvia, (*Mathews*, n. 1703.)

Ex affinitate A. *Opizii* et A. *asperifoliæ*, foliis autem subæqualibus ad A. *diospyrifoliam* accedit. Rami obtuso-trigoni asperi, juniores dense pubescentes. Petioli antice canaliculati 1½-2 cent. longi. Folia 15-22 cent. longa, 7-9 lata, supra opaca, adulta asperrima, punctis elevatis e pilis crassiusculis brevissimis deciduis relictis, pube supra nervos majores persistente; subtus scabra, pilis secundum nervos appressis, cæterum fusco-punctata; costæ 2 superiores fere supra ½ alt. ortæ ad apicem perductæ. Basis subæqualis acute attenuata, apicis acumen modicum acutum. Folia nascentia valde inæquilatera. Pedunculi 1-1½, amenta 10-12 cent. longa pennam corvinam crassa, aspectu ochracea.

39. A. *Kunthiana*, p. 453. Pedunculi paullo longiores quam in reliquis speciminibus a me visis. Caracas, (*Linden*, n. 121.)

40. A. *Cearensis?* p. 456. Amenta breviora. In Brasiliæ, Prov. Goyaz, (*Gardner*, n. 4355.) Quam in Prov. Ceara legit speciem legitimam in vallibus umbrosis, fruticem 6 pedum altum prædicat.

41. A. *leucophylla*, p. 460. Mexicum ad Chilo in Puebla, (*Andrieux*, n. 94.)

42. A. *salicariæfolia*, p. 468. Ins. St. Catherina, Brasiliæ, (*Tweedie*.)

43. A. *ulmifolia*, p. 472, formam pedunculis petiolum paullo superantibus in ins. St. Vincent legit *Guilding*; legitimam in ins. Antigua, *Dr. Nicholson*; in St. Domingo, (*Dr. Imray*.)

44. A. *tenuicuspis*; ramulis petiolisque molliter longeque hirtis, foliis breviter petiolatis membranaceis pellucido-

punctatis supra præter nervum medium versus basin in junioribus hirtellum, glabris, subtus minute punctulatis in nervis venulisque appresse hirtellis scabriusculis, elongato-oblongis inæquilateris longe anguste et acute acuminatis, versus basin attenuatis, basi valde inæquali semicordatis, costis infra ½ alt. utrinque circiter 5, summa ad apicem ducta, amentis breviter pedunculatis rectis folio ½ brevioribus, bracteis conchæformi-peltatis vertice tenere ciliolatis.

Crescit in Peruvia, (*Mathews*, n. 1704.)

Pili ramulorum et petiolorum præ reliquis longi molles haud densi, citius cadentes. Petioli 5-10 mm. longi, lobo baseos majore fere tecti. Folia tenuiter membranaceas læte viridia lævia, subtus pallida glaucescentia subscabriuscula, præsertim versus basin inæquilatera, latere majore in lobulum rotundatum 1 cent. longum producto, altero (angustiore) truncato, apice in acumen lanceolato-lineare valde attenuatum producta, 22-25 cent. longa, 8-10 lata; costæ tenues plerumque utrinque 5 vel et 6 addito infima tenuissima basilari; anastomoses parcæ tenues horizontales. Pedunculi subglabrati 5-8 mm. longi, amenta 10-11 cent. longa, 2-3 mm. crassa, acutiuscula. Flores annulato-spiraliter dispositi.

45. A. *dasypoda;* ramulis petiolis pedunculisque hirto-villosis, foliis membranaceis pellucido-punctatis supra sparse

acumen falcatum lineari-lanceolatum subæquilatera, basi plerumque fere tota æqualia leviter cordata, costis utrinque 3 fere e basi, quorum superior et sequens alte adscendunt, summa ad ⅓ alt. orta cum opposita aream lanceolatam includens ad apicem perducta. Anastomoses tenues subtus vix prominulæ. Amenta nascentia pedunculo densissime hirto quam petiolus breviore suffulta 1½-2 longa crassa ochraceo-hirta.

46. A. *cornifolia*, p. 479. Folia paullo brevius et obtusiuscule acuminata, alioquin a sp. Humboldtiano haud diversa. Columbia, (*Cuming*. 1231.)

47. A. *eriopoda*; ramis angulatis punctulato-asperiusculis, ramulis petiolis foliisque subtus in nervis dense hirtis, his coriaceis pellucido-punctatis supra punctato-asperrimis, subtus-scabro-hirtis et fusco-punctatis, ellipticis paullo inæquilateris longe anguste acuteque acuminatis, basi subæquali acutis, costis usque ad ⅓ alt. utrinque 6-7 parallele adscendentibus 3 mediis ad apicem, reliquis alte versus marginis adscendentibus, amentis erectis rectis cylindricis folio paullum brevioribus, pedunculo cito glabrato petiolum superante, bracteis inflexo-peltatis triangularibus ciliatis, baccis glabris vertice truncato-concavis.

Crescit in Nova Granada, (*Linden*, *n.* 840.) Foliorum indumento et genitalibus ad A. *asperifoliam*, forma autem ad A. *diospyrifoliam* accedit.

Petioli 1 cent. longi antice canaliculati, basi dilatata nodum marginantes, dense fusco-hirti. Folia adulta rigide sed haud crasse coriacea, supra opaca asperrima, in nervis primariis pilis brevibus sensim deciduis instructa nervisque demum canaliculata, subtus ad lentem elevato-punctata opaca præsertim in nervis primariis et margine pilis appressis fuscis barbato-hirtula, haud admodum inæquilatera, in acumen angustum longum acutum terminata, basi parum vel modice inæquali acuta, 14-16½ cent. longa, 6½-7½ in medio lata, fere ad ½ alt. costis subtus prominulis et per totum decursum distinctis pertensis, quorum inferiores 3-4 approximatæ basi proximæ vel ex ea ortæ, reliquæ remotiores alternæ, 1 vel 2 superioris ad apicem ductæ, anastomoses serius tantum prominulæ. Stipula oppositifolia oblongo-lanceolata acuminata striata ciliata cæterum glabriuscula 2⅔ cent. longa. Pedunculi juniores sparse pilosi cito glabrati 1-1½ cent. longi. Amenta 7-10 cent. longa erecta cylindrica acuta recta, baccifera pennam corvinam tenuiorem crassa. Bracteæ conchæformi-peltatæ, vertice triangulares vel semilunares fuscæ margine extenuato brevi-ciliolatæ.

48. A. *Barclayana;* ramulis petiolis pedunculis dense hirtello-pubescentibus, foliis membranaceis sparse pellucido-punctatis utrinque in nervis venulisque sparse appresse hirtellis, supra sensim glabratis subscabriusculis, subtus pallidis demum sublacunoso-scabriusculis, oblique sublanceolato- vel rhombeo-oblongis attenuato-acuminatis, acumine obtuso mucronato vel mutico, versus basin attenuatis, basi obtusa valde inæqualibus, costis utrinque ad ½ alt. 5-6 adscendentibus summa per anastomoses ad apicis marginem ducta, amentis (nascentibus) brevi-pedunculatis brevibus dense hirtis.

HAB. in parte occid. Novæ Granadæ, (*Barclay.*)

Ramuli flexuosi trigoni pubescentes, sensim glabriores et scabrescentes, internodiis 2-5 cent. longis. Petioli 5-8 mm.

Stipula oppositifolia lanceolato-oblonga convoluta coriacea glabrata, marginibus subciliata, 8 mm. longa. Amenta 1-1½ cent. longa valde juvenilia.

49. A. *Peruviana?* p. 481. In Peruviæ nemoribus ad Pangoa, (*Mathews*, n. 1145.)

50. A. *glabrescens;* ramulis punctulato-asperulis, foliis coriaceo-membranaceis pellucido-punctatis supra glabris læviusculis, subtus pallidis punctatis, nascentibus in nervis pilis teneris fugacibus hic illic inspersis, lato-ellipticis subæquilateris, subabrupte longiuscule et acute acuminatis, basi leviter inæquali vel æquali obtusis, costis majoribus utrinque ad ⅔ alt. 3-5, aliisque his intermediis et summis magis patulis, 2 summis ad apicem ductis, pedunculo quam petiolus duplo breviore, amentis brevibus cylindricis crassis obtusis, bracteis conchæformibus vertice truncatis adultis glabris, baccis obpyramidatis, vertice rotundo concavis umbilicatis glabris punctulatis.

Crescit in Guiana Anglica, (*Parker.*)

Quodammodo cum A. *diospyrifolia* comparanda, sed foliorum forma et nervatione, nec non amentis brevioribus tuto distinguenda.

Ramuli tetragono-angulati sulcati, nodi marginati. Petioli 1½-1 cent. longi tenues antice canaliculati. Folia 14-20 cent. longa, 7½-9½ lata, subæquilatera, marginibus revoluta, supra ad tactum vix lævia, subtus læviora pallida demum versus margines subscrobiculata, costis pluribus pertensa, quarum plerumque 4-5 utrinque majores adscendentes, pluresque aliæ haud multum tenuiores sed magis patulæ; anastomoses tenues fere obsoletæ vix reticulatæ. Basis plerumque aliquantulum inæqualis. Pedunculi 5-10 mm. longi. Amenta 3-3½ cent. longa recta calamum scriptorium crassa obtusa. Bractearum vertex truncatus semilunaris glaber.

Sectio HEMIPODION, *Miq.*

51. A. *staminea;* ramulis nascentibus petiolis nervisque subtus quam tenerrime puberulis cito glabris, his coriaceo-membranaceis epunctatis utrinque nitidis lævissimis ellip-

tico-lanceolatis vel lanceolato-oblongis apice attenuato obtusiusculis, basi obtusa valde inæqualibus, venulis subpatulis utrinque circiter 8 tenuissimis, pedunculo petiolum basi substipulaceo-marginatum mox cicatrisatum superante, amentis tenuibus folium circiter æquantibus, bracteis peltatis ciliato-villosulis subtriangularibus, staminibus longiuscule exsertis.

Locum tenet inter A. *Swartzianam* et A. *xestophyllam*, cum nulla autem confundenda.

Crescit in Jamaicæ montibus ad Manchester, Dec. 1843. (*Purdie.*)

Rami vetustiores teretiusculi valde nodosi, cortice lævi albicante parum ruguloso, raro verruculoso, internodiis brevibus; ramuli tenuiter striati. Petioli 5-10 mm. longi, nodum marginantes, e stipulis petiolaribus cito delitescentibus mox cicatrisati, cicatrici usque ad basin lateris minoris folii continuata. Folia lateribus antice conniventibus antice complicata 8-11 cent. longa, 3-3½ raro 4 lata utrinque nitida et lævia subtus pallidiora, lanceolato-oblonga vel ellipticolanceolata, subæquilatera, apice ipso obtuso, basi admodum inæqualia, latere exteriore 5-10 mm. longiore, rotundato; e nervo medio percurrente utrinque 6-8 venæ patulæ utrinque in sicco prominulæ, versus margines bifidæ ramulosæ et nulatim dispositi. Bracteæ pedicellato-peltatæ, pelta transverse suboblongo-tetragona marginibus villosula. Ovarium a lateribus compressum parallelopipedeum, stigmata 4 lineari-lanceolata reflexa pubescentia.—Specimina suppetentia eximia grandiora ac Swartzianum quod olim descripsi, alioquin autem plane congrua. Accedit hæc species ad A. *Lessertianam* e *Sect. Macrostachydis.*

Varietas latifolia. *Ibidem*, n. 104. Folia fere obovato-oblonga breviora et latiora quam in specie, apice acuta, costis paullo crebrioribus, 15-18 cent. longa, 6-9 lata. Anne species?

53. A. *geniculata*, p. 493. Trinidad, (*De Schach.*)

54. A. *Luschnathiana*, p. 494. St. Catharina, Brasiliæ, (*Tweedie.*) Larangeiros, (*Graham.*)

Var. glabrata, p. 495.—Ad Acaripe, Brasiliæ, (*Gardner*, n. 1849.)

55. A. *Casapiensis*; glabra, foliis crassiuscule membranaceis pellucido-punctatis, utrinque glandulis fuscis inspersis glabris præter marginem juniorum versus apicem tenerrime ciliatum, oblongis vel obovato-oblongis apice brevi-acuminato acuto, basi inæquali rotundatis utrinque pluricostulatis, amentis pedunculatis . . . .

Crescit in Casapi, Peruviæ, (*Mathews*, n. 1712.)

Species prope præcedentem apte quidem collocanda, sed tamen ad *Sect. Machrostachydis* etiam spectans, ob genitalia nondum cognita dubiæ affinitatis. Rami teretiusculi striatuli minute verruculosi. Petioli antice profunde canaliculati 2 cent. longi. Folium 28 cent. longum, 11½ latum, subæquilaterale, basi rotundata autem inæquale, latere exteriore 1 cent. longiore, apice brevi-acuminato, acumine lato acutiusculo. E nervo medio per totam longitudinem utrinque 13-14 costulæ venosæ distantiores versus margines adscendentes exoriuntur, parum anastomosantes, suprema fere ad apicem tendens. Stipula oppositifolia lineari-convoluta acuminata fere 2 cent. longa. Amentum valde juvenile.

Aliud specimen sub eadem numero adest, prope Huallaga lectum, sterile, foliis obovato-oblongis apice brevi-attenuato obtusiusculis basi subæquali cuneato-angustatis, costis 16-18 utrinque quod etsi compages foliorum eadem ac in specie, huc referre non audeo.

56. A. *nitida*, p. 495. In Surinam, (*Hostmann*, n. 709.) Demerara, (*Parker.*)

57. A. *tuberculata*, p. 497. Columbia, (*Hartweg*, n. 1399.) Trinidad, (*De Schach,*) St. Vincent, (*Guilding,*) Jamaica, (*Purdie.*)

Varietas amentis brevius pedunculatis, pedunculo petiolum æquante. Caracas, (*Linden*, n. 227.)

58. A. *Demerarana*; ramulis pedunculis petiolis foliisque subtus in nervis dense hirtellis, his brevi-petiolatis membranaceis crebro pellucido-punctatis supra glabris lanceolato-oblongis æquilateris breviter attenuato-acuminatis, basi plus minus inæquali haud profunde conniventi-cordatis, costulis utrinque 8-10 patulo-adscendentibus, summa per anastomosium arcum ad apicem continuata, pedunculo petiolum æquante, amentis patulis brevibus cylindricis, bracteis conchæformibus vertice truncata-hippocrepiformi minute ciliolato glabrato, baccis obpyramidatis vertice concavo-truncatis puberulis.

Hab. Demerara, (*Parker,*) Surinam, (*Hostmann*, n. 312). Haud longe distat ab A. *Luschnathiana.*

In sp. *Hostmanniana* folia basi magis inæqualia 20-22 cent. longa, 7½-8 lata; amenta florentia 2½ cent. longa.

59. A. *Berbicensis*, p. 500. Essequibo, (*Schomb.* n. 53.)

60. A. *Hostmanniana*; ramulis junioribus petiolisque dense foliis subtus in nervis sparse appresse hirtellis, his coriaceo-membranaceis sparse pellucido-punctatis, supra saturate viridibus nitidis glabris, subtus fuscescenti-nitidulis puberulis subpunctatis, elliptico- vel ovato-oblongis subobliquis acute acuminatis, basi leviter inæquali-rotundatis, costis per totam longitudinem utrinque pluribus patulo-adscendentibus venosis, pedunculis petiolum vix superantibus, amentis patulis folio paullo brevioribus, bracteis pedicellato-peltatis, pelta triangulari marginibus extenuata lacero-fimbriata, area centrali nuda transverse oblonga, ovario a lateribus compresso.

HAB. Surinam, (*Hostmann*, n. 116.)

Affinis A. *Berbicensi*, foliorum forma et nervatione et præsertim bractearum forma distincta.

Ramuli angulati appresse hirtelli. Petioli 1 cent. circiter longi appresse interdum subretrorse pubescentes, pubescentia usque ad basin lateris minoris folii continuata. Folia 17-24 cent. longa, 6-8½ lata, ovato- vel sublanceolato-oblonga, alia fere æquilatera, alia perspicue inæquilatera, marginibus subrepanda, apicis acumine modico mucronato-acutato, basi rotundata semper inæquali, latere exteriore ½ cent. prope modum longiore, subtus nitidula fuscescentia imo subaurata, tactu mollia, sed ad lentem in nervo costis venisque pilis griseis appressis instructa; e nervo medio utrinque per totam longitudinem 6-10 costulæ venosæ majores subpatulæ tenues et aliæ his intermediæ breviores et tenuiores, omnes parum prominulæ parceque anastomosantes; arcus e summis anastomosibus ortus ad apicem ductus. Stipula oppositifolia lanceolato-carinata dorso hirta 1 cent. longa. Pedunculi 1-1½ cent. longi, juniores parce pilosuli, adulti glabrati. Amenta 11-12 cent. longa patula, sub anthesi pennam passerinam crassa, baccifera crassiora. Flores spiraliter dispositi. Bracteæ pedicellato-peltatæ marginibus late extenuatis griseo-luteolo villosulæ, area centrali nuda exigua. Ovarium a lateribus compressum; stigmata teretiuscula. Antheræ ovatæ. Baccæ obpyramidatæ tri-tetragonæ, vertice truncato bracteas superantes.

Forma? foliis ovato-oblongis latioribus 22 cent. longis, 9 latis, nervis primariis paucioribus, quorum summus per anastomoses ad apicem ducitur, ideoque ab ipsa specie satis distincta, nec tamen ob reliquarum partium perfectam congruentiam disjungenda. Guiana Anglica, (*Parker*.)

61. A. *persicariæfolia*, p. 499; *var.* foliis brevius petiolatis et bracteis densius hirto-ciliatis.

Hab. Nova Columbia, (*Cuming*, 1290.)

Habitu magis quam characteribus a specie differt. Petioli dense hirtelli 2-4 mm. longi. Folia 11-12 cent. longa, 3-4 lata, crassius membranacea, supra subnitida glandulis prominulis demumque verruculis fere scabriuscula, subtus paullo pallidiora, in nervo sparse pilosa, haud scrobiculata. Pedunculi petiolis crassiores 8-10 mm. longi, amenta patula æque ac folia unilateralia, 5-6 cent. longa, matura 3-4 mm. crassa. Bracteæ hirto-ciliatæ, area nuda exigua.

62. A. *Lehmanniana*; ramis ramulisque verrucoso-punctatis, petiolis pedunculisque junioribus sparse pilosis, foliis subtus in nervis appresse hirtellis supra glabris, crebro

cent. longa, 3-3½ lata, supra atroviridia subobscura glabra præter nascentiam imam basin, subtus pallida subpunctata in nervis appresse hirtella, nervis tenuibus adscendentibus 2 sup. ad apicem ductis, anastomosibus parcis fere obsoletis. Stipula oppositifolia membranacea scariosa nervosa lanceolata, marginibus et nervo medio crassiusculo postice ciliolatis glabratis 1⅓-2 cent. longa decidua. Pedunculi juniores 4-5 mm. longi, amenta 7-8 cent. longa, pennam passerinam crassa recta apice leviter obliqua acutiuscula. Flores annulatim dispositi.

Sectio ISOPHYLLON, *Miq.*

63. A. *heterophyllæ*, p. 502, forma *angustifolia?* Specimen sterile, foliis 18-22 cent. longis, 4½-6 latis, iis A. *colubrinæ* forma fere similibus. In Peruvia, (*Mathews*, n. 1711.)

64. A. *polyneura*, p. 504. In Peruviæ nemoribus ad Pangoa, (*Mathews*, n. 1144.) Amenta folio ½ vel ⅓ breviora. Folia aliquid latiora quam in specimine Pœppigiano.

65. A. *Parkeriana;* ramulis uno latere duplici serie hirtellis dein glabratis, foliis crassiuscule membranacis pellucido-punctatis, supra glabris subopacis, subtus in nervis petioloque postice hirtellis lanceolato-oblongis æquilateris acuminatis, basi æquali vel subæquali acutis patulo-multicostatis, pedunculo petiolum bis quaterve superante hirtello, amentis brevibus cylindricis obtusis, bracteis conchæformibus, vertice truncato subpuberulis glabrescentibus, baccis obovato-polygonis, vertice truncato concavis, stigmatibus 3 brevibus.

HAB. Demerara, (*Parker.*)

Ex affinitate A. *rhododendrifoliæ*, *anonæfoliæ*, et *eucalyptifoliæ*. Rami dichotomi nodosi teretes stricti glabri, nodi marginati, internodia 4 cent. longa, uno latere plerumque planiuscula; ramuli duplici serie pilorum patulorum instructi. Petioli antice canaliculati 2-5 mm. longi, postice hirtelli glabrescentes. Folia 13-16 cent. longa, 4-6 lata, plerumque omnino æquilatera et basi acuta, quædam basi leviter inæquali magis obtusiuscula, apicis acumine recto obtusiusculo vel acuto; e nervo medio subtus prominente et percurrente utrinque costulæ venosæ 12-16 subpatulæ (præter 2 infimas magis adscendentes,) omnes præsertim versus margines anastomosantes reticulatæ subtus prominulæ. Stipula oppositifolia decidua lanceolata carinata recta glabriuscula, dorso inferne hirtella, 1½ cent. longa. Pedunculi 1-2 cent. longi; amenta baccifera 2-3 cent. longa subpatula recta obtusa.

66. A. *rhododendrifolia*, p. 506. Demerara, (*Parker*.)

67. A. *obovata*, p. 508. Casapi Peruviæ, (*Mathews*, n. 1692.)

68. A. *æqualis*, p. 511. St. Domingo, (*Imray*, n. 329.)

69. A. *adenophora*, p. 514. Cayenne, (*Martin*.)

70. A. *modesta?* p. 517; differt nervis subtus sparse hirtellis, in. sp. Guianensi olim descripto glabris, quod verisimiliter ex ætatis differentiis explicandum.

HAB. Nova Granada, (*Linden*, n. 921.)

71. A. *lentaginoides*, p. 520.—Columbia, (*Hartweg*, n. 1400.) Vix differt a sp. Brasiliensi nisi foliis paullo crassioribus, supra sulcatis; bracteæ nascentes subciliolatæ.—Stirps sub n. 1398 a *cl. Hartweg*, lecta vix differre videtur.—Proxima etiam et vix diversa species est a *cl. Mathews* in Pangoa, Peruviæ lecta, (n. 1147.)

72. A. *cuspidata*; glabra, foliis membranaceis subtus pallidis glandulosis et pellucido-punctatis ovato- vel lanceolato-

glandulis fuscis punctulata, nervis tenuibus e nervo medio percurrente infra ⅓ vel ⅔ alt. utrinque 3, raro 4 fere alternis, quorum tres superiores fere ad apicem ducti, reliqui brevissimi, anastomosibus parcis tenuibus, æquilatera, acumine lineari acutissimo uninervio, 11-13 cent. longa, 3½-5 lata. Stipula oppositifolia lineari-lanceolata 1 cent. fere longa. Pedunculi 1-1½ cent. longi. Amenta 6-8 cent. longa, pennam corvinam crassa leviter curvata, floribus annulatim dispositis. Stamina 3 ?

73. A.? *Warakabacoura*, glabra, foliis membranaceo-coriaceis obsolete pellucido-punctatis breviter petiolatis æquilateris lanceolato-ellipticis brevi-acuminatis vel acutis, ima basi acuta in petiolum attenuata utrinque venoso-costulata, venulis patulis circiter 7, subtus reticulatis, amentis pedunculatis, bracteis conchæformibus.

Guiana Anglica, (*Parker*.) Incolis *Warakabacoura*, partem sistens famosi veneni *Ourali*.

Foliorum forma *Ottoniis* haud absimilis et bracteis in suppententi sp. autem nimis juvenilis, ejus generis characteribus vix repugnant. Cum autem genitalium indoles prorsus lateat, provisorie huc retuli.

Rami subteretes vel uno latere compressi, striati, læves, cinerascentes, rigidi, nodis tuberculato-incrassatis, ramulis compressis, internodiis 2-8 cent. Petioli 2-3 mm. longi antice canaliculati. Folia 18-22 cent. longa, 7 fere 8 lata, æquilatera apice in acumen breve acutiusculum desinentia vel tantum acuta, basi latiora, ima subito acute in petiolum contracta, supra nervo medio sulcata, subtus costulis 7-8 utrinque per totam longitudinem dispositis instructa, quæ versus margines in arcum confluunt et anastomosibus crebris reticulatis prominentibus junguntur. Amenta oppositifolia pedunculata cylindrica valde juvenilia; bracteæ nascentes conchæformes glabriusculæ ?

Sectio SALIUNCÆ, *Miq.*

74. A. *Leprieurii*, p. 525. Surinam, (*Hostmann*, n. 1275.)

OTTONIA, *Spreng.*

1. O. *Anisum*, p. 536, *var.* pedicellis glabris. p. 538.

HAB. in sylvis montium Organensium, Martio 1841, (*Gardner*, n. 5862.)

2. O. *Hookeriana*; ramulis petiolis foliisque subtus in nervo medio hirtellis, his subæquilateris elliptico-lanceolatis anguste acuteque acuminatis, basi æquali vel leviter inæquali cuneatis interdum subemarginatis, membranaceis, parce pellucido-punctulatis, supra glabris vel nascentibus pilis tenerrimis inspersis, pedunculis petiolum æquantibus rhachique tenere hirtellis, pedicellis glabriusculis baccas superantibus, stigmatibus exiguis sessilibus.

HAB. in sylvis Prov. Minas Geraes, Brasiliæ. Oct. 1840. Frutex tripedalis, (*Gardner*, n. 5186.)

Rami teretes striati glabri, nodis tuberculatis incrassatis, ramuli juniores præsertim uno latere tenuiter hirtelli cito glabrati. Petioli antice canaliculati dense hirtelli 3-5 mm. longi. Folia aut omnino æquilatera aut paramper inæquilatera, basi æqualia vel vix aliquid inæqualia, 15-16 cent. longa, 4-4½ lata, supra opaca, subtus pallida e nervo medio prominente versus basin præsertim hirtello venulis subpatulis utrinque circiter 6-8 reticulatis prope marginem confluentibus pertensa. Stipula oppositifolia lineari-lanceolata, mari-

Description de deux genres nouveaux de la famille des EUPHORBIACÉES; *par* J. E. PLANCHON, *docteur-ès-sciences.*

(TABS. XV. XVI. A.)

STACHYSTEMON, (TAB. XV.)

CHAR. GEN. *Flores* monoici.

MASC. *Calyx* 5-6 partitus laciniis coloratis subulatis, rigidulis, subæqualibus, uniseriatis. *Corolla* 0. *Columna antherifera* per antherim elongata, sanguinea. *Antheræ* plurimæ minutæ secus columnam inordinatim dispositæ, pulvinulo glanduliformi insidentes sessiles, uniloculares, transversim bivalves. FŒM. *Calycis* glumacei *foliola* 6 imbricata, ovato-lanceolata, carinata, margine scarioso denticulata, hinc dente excisa. *Ovarium* oblongum, glaberrimum, perianthiò arcto inclusum, 2-rarius 3-loculare loculis biovulatis. *Styli* numero loculorum, subulati, exserti, apice revoluti acie internâ stigmatosi. *Ovula* sub processu lato loculi ferè dimidium superiorem occupante collateraliter appensa, anatropa, subglobosa. *Fructus*....?

Suffruticulus *Novæ Hollandiæ, humilis glaberrimus, habitu* Micrantheæ; foliis *alternis, rigidis, confertis, linearibus, acutis;* stipulis *minutis subulatis petiolo brevi utrinque adnatis;* floribus *in apice ramorum circum gemmam innovantem congestis, axillaribus, masculis columna staminifera, vermiformi, sanguinea conspicuis, fœminæis paucis inter fasciculum masculorum sæpius occultis.*

Stachystemon *verniculare.*

HAB. Prope Flumen Cygnorum, legit *Drummond.*

Ce genre, bien différent de celui qui suit, est très-voisin, au contraire, du *Pseudanthus* de Sieber. On observe dans les deux le même habitusroide, les mêmes feuilles à stipules soudées avec le pétiole, et surtout, la même structure de calice, qui par une singularité, dont les *Euphorbiacées* four-

nissent beaucoup d'exemples, se trouve très-différent dans les fleurs des deux sexes. Le *Stachystemon* paraît encore s'accorder avec le *Pseudanthus* par la position de ses ovules geminés, et par le processus charnu du placenta contre lequel leur micropyle vient s'appliquer. La différence la plus frappante entre les deux genres, consiste dans les étamines très-nombreuses dans le premier, et réduites à 5 ou 6 dans le second.

Planche XV. Stachystemon vermiculare : *Fig.* 1. Une feuille avec ses stipules adnées au pétiole ; *f.* 2. une fleur mâle ; *f.* 3. anthère, vue en profil ; *f.* 4. la même en face ; *f.* 5. fleur femelle ; *f.* 6. coupe de l'ovaire dont on a retranché les styles : il y a deux ovules collatéraux dans chaque loge. Tous détails sont plus ou moins grossis.

BERTYA. (TAB. XVI. A.)

CHAR. GEN. *Flores* monoici, singuli intra involucrum calyciforme e bracteis 5-6 adpressis formatum subsessiles. *Calyx* coloratus, scarioso-membranaceus, quinquepartitus laciniis obtusis æstivatione imbricatis. *Corolla* 0, MASC. *Stamina* indefinita : filamenta in columnam exsertam, dense antheriferam, coadunata ; *antheræ* breviter pedicellatæ, oblongæ, erecto-patentes, biloculares extrorsum longi-

1. Bertya *oleæfolia*; foliis *Oleæ albæ* supra pilis stellatis, brevibus, sparsis, scabridis, subtus dense incanis; floribus sessilibus squamis involucri liberis anguste ovatis, adpressis.

Hab. In petrosis sterilibus vallis Wellington, legit *All. Cunningham*.

2. Bertya *gummifera*; foliis linearibus, margine valde revolutis, supra papillis minutis scabratis, subtus lana cinerascente indutis; floribus sessilibus, stylis basi coalitis. Croton gummiferum, *All. Cunningh. in herb. Hooker*.

Crescit cum præcedente.

3. Bertya *rosmarinifolia*; foliis linearibus, brevibus, supra glabris, subtus adpresse incanis; floribus pro genere parvis, breviter pedicellatis, stylis 3 distinctis, profunde tripartitis. Croton rosmarinifolium, *All. Cunningh. in herb. Hooker*.

Hab. Juxta amnem, *Cox*, et in montibus cœruleis, leg. *All. Cunningham*. (In horto Kew ent culta.)

4. Bertya *Cunninghamii*; glaberrima; folia et flores fere præcedentis, foliis plane sessilibus et ramulis lineis elevatis resinosis e basi foliorum decurrentibus angulatis.

Hab. In interiore Novæ Hollandiæ orientalis extratropicæ abundat. (*All. Cunningham in herb. Hooker.*)

5. Bertya *pinifolia*; glaberrima; foliis linearibus, longis, mucronatis, scabridis; floribus sessilibus, bracteis involucri linearibus cum calyce dense resinoso conglutinatis.

Hab. Juxta amnem Brisbane, legit *Fraser*.

Je dédie ce genre à M. le Comte Léonce de Lambertye, qui partage heureusement ses loisirs entre la culture des fleurs brillantes des jardins, et l'étude de ces fleurs modestes qui ne revèlent leurs charmes qu'à l'œil qui sait les découvrir et les admirer. L'existence d'un genre Lambertia expliquera d'une manière satisfaisante l'altération que j'ai du faire subir au nom de M. de Lambertye en l'appliquant au genre ici décrit.

Ce genre doit prendre place à côté du *Beyera*, Miqu. ou *Calyptrostigma*, Klotsch, fondés à-peu-près en même

temps sur le *Croton viscosum* de Labillardière, et les espèces congénères. C'est là que l'appellent en effet son port, la propriété d'exsuder une matière résineuse et les caractères plus positifs de sa structure florale. Un examen superficiel risque de faire prendre chez le *Bertya*, l'involucre uniflore pour un calice et le vrai calice pour une corolle, ce qui conduirait naturellement à rapprocher ce genre du *Ricinocarpus* de Desfontaines. Pour prévenir cette erreur, je dois dire que dans plusieurs de ces faux calices, j'ai trouvé deux fleurs développées, l'une mâle supérieure, et l'autre femelle plus courte, naissant presque du même point que la première et munie comme elle de son calyce scarieux et coloré.

Tab. XVI. A. *Fig.* 1. Fleur mâle du *Bertya oleæfolia* grossie; *f.* 2. fragment d'un rameau du *Bertya rosmarinifolia* chargé de fleurs femelles, de grandeur naturelle; *f.* 3. une de ces fleurs isolée et grossie; *f.* 4. son ovaire depouillé des enveloppes florales; 5. le même coupé; 6. loge fertile et bivalve du *Bertya gummifera*, renfermant une graine.

Sur les affinités des Genres HENSLOWIA, *Wall.* (Crypteronia? *Blume.* Quilamum? *Blanco.*) RALEIGHIA, *Gardn.* *et*

un examen immédiat de son objet, parce qu'elle s'approche beaucoup de celle que j'en avais moi-même à cette époque, et qui fait le sujet de cette note. Comme introduction indispensable aux conclusions qui vont suivre, je dois rappeler les caractères de ce genre, en les complétant par la description du fruit.

HENSLOWIA, *Wall.*

Flores dioici vel rarius polygami? *Calyx* urceolatus 5-fidus, laciniis æstivatione valvatis. *Petala* 0. MASC. *Stamina* 5 fere calycis laciniis interjecta, margini disci pubescentis ejusdem fundum vestiente inserta. *Filamenta* æstivatione *induplicato-inflexa*. *Antheræ* loculi connectivum crassum oblique marginantes. *Pistilli* rudimentum minutum.— FŒMIN. *Stamina* sæpius abortiva brevia, in *Henslowiæ Cumingii* elongata, forsan fertilia. *Ovarium* ovatum, biloculare, in stylum brevem attenuatum. *Ovula* plurima placentæ prominulæ septo medio adnatæ inserta, adscendentia, anatropa. *Capsula* basi calice cincta, ovato-acuminata, loculicide bivalvis, valvis *medio septiferis*, ima basi et summo apice styli persistentis connexis, latere utroque hiantibus, in pedicello reflexo persistentibus. *Semina* plurima septo a basi infra medium, mediante placenta prominente, utrinque inserta, ascendentia. *Funiculus* crassus, brevis; testa versus chalazam in appendicem cellulosam relaxata. *Embryo* exalbuminosus, *radicula* umbilico proxima.

Arbores *Indiæ Orientalis præsertim insularis*, ramulis *tetragonis*; foliis *oppositis*, *breviter petiolatis*, *integerrimis*; floribus *minutis*, *viridescentibus*, *secus ramos elongatos paniculæ brachiatæ*, *plus minus confertis*.

Si des caractères qui précèdent on isole les plus essentiels, les feuilles opposées sans stipules, le calice à estivation valvaire, l'insertion perigynique des étamineset l'inflexion de leurs filets qui sont pliés en deux dans le bouton, et surtout les caractères de la capsule et des graines, on pourra soupçonner déjà que c'est parmi les *Lythrariées* qu'il faut chercher des genres analogues à l'*Henslowia*. Cette recherche nous conduit d'abord à ceux des genres de cette famille chez lesquels la regularité des fleurs est liée avec l'absence de denticules accessoires du calice. Tels sont le *Lawsonia*, le *Crenea* d'Aublet, (auquel il faut réunir comme synonyme le *Dodecas* de Linné fils,) l'*Adenaria* de Kunth, et l'*Abatia* de Ruiz et Pavon. (*vid.* Tab. XVI. D.) Ce dernier genre surtout coincide avec l'*Henslowia* par l'absence, de pétales et, à quelques modifications près, par la structure de la capsule et des graines. C'est aussi près de lui que l'*Henslowia* me paraît devoir prendre place. La différence qui pourrait frapper le plus entr'eux, c'est que dans le premier, les étamines nombreuses s'insèrent dans le tube même du calice bien au-dessous de son bord, tandis que chez le second, elle sont au nombre de cinq, et presque inserées entre les dents calycinales. Mais, l'on sait que ces deux modes d'insertion staminales se trouvent séparés ou réunis chez les divers genres de Lythraires et notamment chez le *Lagerstrœmia.* Sur la nature de cette double production d'étamines dans la même fleur, on pourra consulter avec intérêt les considérations sur les organes floraux du Professeur Dunal, dont je suis fier d'être l'élève et l'ami.

Un autre genre qui se lie étroitement à l'*Abatia,* est le *Raleighia* récemment décrit par Mr. Gardner. L'idée qu'à être rapportée aussi à la famille de *Lythrariées*. C'est le genre *Alzatea* de Ruiz et Pavon. Il se trouve parmi les *Celastrinées* douteuses, dans un ouvrage d'une immense utilité, qui est un beau monument élevé aux travaux des Jussieu et des Brown, mais où doivent nécessairement se retrouver les imperfections de la science.

Sans sortir du champ des suppositions probables, je croirais pouvoir regarder le *Crypteronia* de Blume comme identique avec l'*Henslowia*, et probablement aussi avec le *Quilamum* de Blanco. Les raisons sur lesquelles se fonde cette idée peuvent être jugées par ceux qui liront et compareront les descriptions de ces genres. En attendant, je n'ai pas cru devoir, sans un fondement plus solide, remplacer le nom d'un genre qui est parfaitement décrit et figuré dans un magnifique ouvrage, par un nom qui est perdu en quelque sorte à la suite des *Rhamnées* douteuses du *Genera* d'Endlicher. Ce que je n'ose faire cependant, la loi d'antériorité obligera un autre de l'accomplir, si comme j'ai lieu de le croire, l'identité des genres se confirme.

Il me reste enfin pour terminer cette note, à donner la diagnose des espèces d'*Henslowia*, que renferme l'Herbier de Sir W. Hooker, et sur lesquelles j'ai fait mes observations. La distinction en est extrêmement difficile, et les caractères peu tranchés, ainsi qu'on pourra s'en apercevoir, par les phrases descriptives où j'ai tâché de mettre en relief les différences les plus marquées.

1. Henslowia (Crypteronia?) *pubescens*, (Tab. XVI. B.) Wall. pl. Asiat. rar. III. p. 14, tab. 321.

H. ramis teretibus glabris, ramulis obtuse tetragonis foliisque subcoriaceis subtus dense lutescente pubescentibus, paniculæ brachiatæ magnæ ramis compressis floribusque puberulis.

Hab. in montib. Insul. Penang.

2. Henslowia (Crypteronia?) *affinis*, sp. nov.

H. præcedenti simillima, differt foliis membranaceis, nervis tenuibus, fructibus fere duplo majoribus, minus confertis,

pube pulverulenta rufescente nec ut in priore pallide lutescente conspersis. Variat foliis subtus pubescentibus, vel glabris.

HAB. in Provinc. Mergui, (Griffith in herb. Hook.)

3. Henslowia (Crypteronia?) *glabra*, Wall.

H. ramis teretibus, ramulis lævibus obtusissime tetragonis; foliis glaberrimis longiuscule obtuseque acuminatis, nervis supra valde impressis; paniculis (saltem fœmineis) brevibus, parum ramosis; floribus quam in præcedente majoribus.

HAB. in Insul. Philippinens. (Cuming, exsic. n. 794.)

4. Henslowia (Crypteronia?) *leptostachys*, sp. nov.

H. glaberrima; ramis teretibus, ramulis tenuibus obtuse tetragonis; paniculæ ramis gracilibus elongatis; floribus minutis interrupte subglomerato-sparsis.

HAB. in Insul. Philippin. (Cuming. exsic. n. 1464.)

5. Henslowia (Crypteronia?) *Cumingii*, sp. nov. (Tab. XIV. C.)

H. polygama? ramulis crassis acute tetragonis; foliis glaberrimis, coriaceis, subtus reticulato-nervosis; paniculis magnis ramosissimis; floribus pro genere majusculis; staminibus longis (an fertilibus?) cum calice sub fructu persistentibus. (In aliis quidem stamina in flor. fœmineo ad-

BOTANICAL INFORMATION.

Notes on the VEGETATION *and general character of the* MISSOURI *and* OREGON TERRITORIES, *made during a Botanical journey from the State of Missouri, across the south-pass of the* ROCKY MOUNTAINS, *to the Pacific, during the years* 1843 *and* 1844; *by* CHARLES A. GEYER.

(It is with no small satisfaction we are able to announce to our scientific friends that Mr. Charles A. Geyer, who distinguished himself by the Botanical collections he made with Mr. Nicollet in 1838 and 1839, between the Missouri and Mississippi Rivers, has recently arrived in England with a very valuable and beautifully preserved collection of Plants, gathered in the Upper Missouri, on the Rocky Mountains, and in the Oregon Territory, during the years 1843 and 1844. Mr. Geyer is thus honourably mentioned by Drs. Torrey and Gray in the 2nd volume of their admirable "Flora of N. America," p. 69:—"We are greatly indebted to the kindness of M. Nicollet for an extensive collection of dried specimens, made during his survey of the country between the Missouri and the sources of the Mississippi, under the orders of the Secretary of War. The collection was formed by Mr. C. A. Geyer, an assiduous German Botanist, who was attached to the Expedition.* The specimens are very complete, and

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[*] Mr. Geyer commenced his investigations in the Western territories of the United States so early as the year 1835, when, with only one attendant, he started from New York, and penetrated the Missouri plains as far as Big Nemahaw, Lower Platte river; but owing to fever and ill-treatment by a party of Indians, he was obliged to return with very little success. It was in going back to St. Louis, on board the steamer of the American Fur Company, that he met M. Nicollet, who invited him to accompany his expedition to the sources of the Mississippi in 1836 and 1837. This, however, at the time he declined; but joined that enterprising gentleman in surveying the Missouri, (as high up as the Little Missouri), and almost the whole of that immense country (now Dacotaha and Iowa territory) between the Missouri and Mississippi. In 1840 Mr. Geyer collected about St. Louis. In 1841 he made a tour with M.

in the finest preservation; and the localities, with other particulars, have been carefully recorded by Mr. Geyer. They were chiefly gathered during the autumn, and latter part of summer: the earlier, and perhaps most interesting collections were unfortunately lost." A Catalogue of this Herbarium was published by our excellent friend Dr. Torrey, in the Appendix to M. Nicollet's "Report intended to illustrate a Map of the Hydrographical basin of the Upper Mississippi River."

This collection is peculiarly interesting, as illustrating the Botany of a region lying considerably to the south* of those

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Fremont up the Desmoines river, Lower Iowa territory, being chiefly, however, occupied in surveying. In the botanical collection then formed, which suffered much by the filling of a canoe, he had several new plants, which are placed in the Herbarium of Dr. Engelman at St. Louis, and they cannot well be in better hands, for that gentleman has himself successfully explored the botanical riches of a great part of the state of Arkansas, and is familiar with the Flora of St. Louis. During the year 1842, Mr. Geyer directed his attention to the Botany of the Upper Illinois country, where, especially about Sougamon river, he formed the Herbarium which was first offered for sale. In 1843, he commenced the intrepid journey, the botanic results of which are now about to be detailed.

* Other plants were collected by the officer, Lieut. J. C. Fremont, as detailed in that gentleman's "Report on an Exploration of the country lying between the Missouri river and the Rocky Mountains, on the line

countries so successfully explored by the intrepid travellers, Douglas and Drummond, extending as it does from the 29° to the 48° of lat.; and, in conjunction with the discoveries of the talented and indefatigable Nuttall, and of Lieut. Fremont,

FREMONTIA, (nov. gen.) *Flowers* diclinous monoicous? dioicous, heteromorphous. *Stam. Fl.* in terminal aments. *Scales* excentrically peltate, on a short stipe, angular, somewhat cuspidate upward. *Stamens* 2-3-4 under each scale, naked, sessile; anthers oblong. *Pist. Fl.* solitary, axillary. *Perigonium* closely adhering to the lower half of the ovary, the border entire, nearly obsolete, but in fruit enlarging into a broad, horizontal, angular, and undulate wing. *Ovary* ovate; *styles* thick, divaricate; *stigmas* linear. *Fruit*, a *utricle*, the lower two-thirds covered with the indurated calyx, compressed. *Seed* vertical, integument double. *Embryo* flat-spiral (2-3 turns), green; *radicle* inferior; *albumen* none.

Fremontia vermicularis (Batis? vermicularis, Hook. Fl. Bor. Amer. 2, p. 128.) Uppermost fork of the Platte, near the mouth of the Sweetwater, July 30.—A low, glabrous, diffusely branched shrub, clothed with a whitish bark. Leaves alternate, linear, fleshy, and almost semiterete, 6-12 lin. long, and 1-2 lin. wide. Staminate aments about three-fourths of an inch long, cylindrical, at first dense, and composed of closely compacted angular scales, covering naked anthers. Anthers very deciduous. Fertile flowers in the axils of the rameal leaves. Calyx closely adherent, and at first with only an obscure border or limb; but at length forming a wing 3-4 lin. in diameter, resembling that of *Salsola*.—This remarkable plant, which I dedicate to Lieutenant Fremont, was first collected by Dr. James about the sources of the Canadian river, (in Long's expedition); but it was omitted in my account of his plants published in the Annals of the Lyceum of Natural History. It is undoubtedly the *Batis? vermicularis* of Hooker, (l. c.) collected on the barren grounds of the Oregon River, by the late Mr. Douglas, who found it with only staminate flowers. We have it now from a third locality, so that the plant must be widely diffused in the barren regions towards the Rocky Mountains. It belongs to the sub-order *Spirolobeæ* of Meyer and Mocquin; but can hardly be referred to either the tribe *Suædinæ*, or to *Salsoleæ*, differing from both in its diclinous, heteromorphous flowers, and also from the latter in its flat-spiral, not cochleate embryo."

This description of Dr. Torrey, Dr. Gray observes, shows not only that the fertile flowers have a perianth (which Dr. Lindley appears to doubt); but that this perianth in fruit forms a circular ring, as in *Salsola*. I may observe that I now possess, from Mr. Geyer and other travellers, fine specimens of this interesting plant, and they will be further noticed in the Catalogue of Mr. Geyer's plants.—ED.

already mentioned, must render our knowledge of the vegetation of these extensive wilds very considerable.

Mr. Geyer has now divided his ample collections into 20 sets; the fullest of which amounts to 600 species; the lowest to 2 or 300; but the species wanting in these lower sets are not generally the scarcest kinds, for of such Mr. Geyer was careful to collect abundantly: and the sets are now offered to Botanists at the rate of £2 the 100 species, all expenses included. Orders may be sent to Mr. C. A. Geyer, at the Royal Botanic Gardens, Kew, or to R. Heward, Esq., Young Street, Kensington.

It will be our agreeable task to publish a Catalogue of this collection, with remarks and descriptions of the new species; this Catalogue to be prefaced by some account of the journey detailed by Mr. Geyer himself.)—Ed.

PRELIMINARY REMARKS.

In the spring of 1843, I set out from St. Louis, Missouri, and joined the party of Sir W. D. Stewart, of Murthly Castle, Scotland. I not only received every possible assistance from that gentleman, as far up as the Wind River Mountains; but he also kindly provided me with a letter of recommendation to the venerable Governor McLoughlin, of the kindness of the superior of the Catholic missions, I was permitted to proceed with their caravan to the Flathead mission, after parting from Sir W. Stewart at the Wind River Mountains. I enjoyed their hospitality, and finally accompanied a mission party to the Cœur d'Aleine Indians, an entirely new field for my researches on the upper waters of the Spokan and Kallispell Rivers.

For the opportunity of exploring the fertile part of the Spokan country, (which was only visited by the Botanist Douglas about as far as 80 miles west of Fort Colville), I am especially indebted to the Reverend gentlemen, Messrs. Eells and Walker, of the American Board of Foreign Missions, at Tshimakain.

I arrived in the midst of winter 1843, almost exhausted by want of food, having been lost, and wandering alone in the mountains and woods for thirteen days, where the snow was two and three feet deep. Never shall I forget the kindness and unremitting attention bestowed upon me in that forlorn situation; the more felt after my exposure to the inclemency of the weather for eight successive months. To a brother Missionary, of the same body, I owe the means of visiting another new field, the Highlands of the Nez-Perçez Indians, where he accompanied me on my excursions, and also afforded facilities to investigate the flowery Koos Kooskee valley over again, where previous botanists had but cursorily passed.

It must, no doubt, be gratifying to the lovers of natural history that such assistance is rendered to scientific travellers; not only since it would be impracticable, even with all the means, to traverse the different Indian tribes unmolested, or without considerable difficulties, but it also shows that the necessity for extending our knowledge of the productions of nature is felt and cheerfully aided, even in the recesses of that vast western wilderness. May future explorers, for whom there is yet enough in store, meet with the same reception under those hospitable roofs!

NOTES ON THE MISSOURI AND OREGON TERRITORIES.

This extensive region of North America presents so many interesting features, both in its vegetation and in a geological point of view; the latter too, of so perplexing a nature, that a satisfactory physico-geographical description cannot be attempted by me. Nor do all those existing data, which have been at different times advanced by previous travellers, suffice to convey a true idea of that vast country to the reader. I shall, therefore, confine myself closely to the botanical characteristics, only venturing to touch its geological chaos, where it is required and warranted by sufficient authority and personal examination.

MISSOURI TERRITORY.

Passing up the Platte River to Fort Laramie, thence through the most northerly narrow range of the "Black Hills" across the Saline desert to the "Red Butter," and "Rock Independence" at Sweet-water, or Eau Sucrée River—Thence to "Wind River Mountains," and across the "Upper Colorado," near the mouth of "Grand Sableuse," to "Fort Hall," and "Boiling Springs" of "Lewis River"—And finally to the sources of Missouri, across Madison's fork at Beaver-head, on the central chain of the Rocky Mountains: connected with previous

Americana; thickets of *Corylus Americana* occurring here and there in the valley; and *Quercus Chinquepin* on the limestone hills.

By enumerating the different forest-trees, it will be seen that none but the most common are diffused so far away from the Missouri river-woods. This is the most remote western habitat of *Platanus occidentalis*, *Juglans nigra*, *Gymnocladus Canadensis*, *Morus rubra*, *Tilia Americana*, *Celtis occidentalis*, *Quercus macrocarpa*, *Fraxinus acuminata*, *Acer eriocarpum*, *Negundo fraxinifolium*, and *Æsculus pallida*; the undergrowth consisting of *Cornus circinnata* and *alba*, *Zanthoxylon fraxineum*, *Rhamnus parvifolius*, *Cratægus crus galli*, *Ribes triflorum* and *floridum*, *Vitis riparia*, *cordata* and *quinquefolia*. Of herbaceous plants, likewise, only the most common accompany the foregoing forest-trees to the limit of their range, chiefly *Anemone Pennsylvanica*, *Urospermum Claytoni*, *Geranium maculatum*, *Sanicula Marylandica*, and *Carex varia*.

Turning away from the outskirts of the gigantic western forest to the beautifully undulated prairies of the lower Kanzas, stretching themselves, as if endless, along the horizon, great is the disappointment of the traveller, for he must soon exchange them for the desert! It is a charming sight, in the months of May or June, (in fact throughout the summer season also) to behold these prairies teeming with flowers. Already, in April, *Viola delphinifolia*, and *Anemone tenella*, with *Hypoxis erecta*, constitute the first ornament; next follow *Batschia canescens*, *Castilleja coccinea*, *Pedicularis Canadensis*, *Cypripedum candidum*, with *Carex Torreyana*, and *Meadii*, in such abundance, as to form almost a carpet by themselves. On the upland prairies and limestone-hills, we find the superb *Pentstemon grandiflorum*, with its no less showy companions *Pentstemon dubium*, *Œnothera Drummondii*, *Polytaenia Nuttallii*, *Ceanothus Americana*, and *Amorpha canescens*.

In the month of June another flora is preceptible in the lower plains. Plants, flowering for twice as long a time as the former, and growing about twice as high. Amongst these stand preeminent as the most showy :—*Asclepias tuberosa, Phlox aristata*, (varying, in its native place, so much in colour, as to resemble the *Dianthus barbatus* of the gardens); then come *Petalostemon violaceum* and *candidum*, *Salvia azurea*, *Lilium Canadense*, *Melanthium Virginicum*, and *Baptisia azurea*. Later still, towards August, the *Compositæ* reign almost alone, from *Helianthus angustifolius*, *Actinomeris helianthoides*, *Ambrosia trifida* and *Silphium connatum*, (growing 5-15 feet high in the most fertile spots) to the dwarf *Aster sericeus* of the adjoining limestone-hills.

Great difficulties presented themselves to us while traversing this beautiful country. Rivers, with steep banks of 50 or 60 feet in height, where we had to let our waggons and baggage-carts down upon ropes; and sudden rises of water, peculiar to these streams, and which when full, defy almost any attempt to cross them, resembling so many torrents. Daily we had to traverse some or other of the smaller rivers, and often were obliged to construct bridges by felling a large tree, and carrying our baggage over, and then swimming the horses through.

Towards the sandy barriers of the valley of the lower Platte, the Missouri limestone disappears almost entirely

Lathyrus ornatus, *Anemone tenella* and *Pennsylvanica*, and *Hymenopappus corymbosus*. In wet places may be seen groups of *Iris Virginiana*, and *Tripsacum monococcon*, mingled with *Carices*, *Eryngium aquaticum*, and *Zigadenus glaberrimus*.

On arriving at the Platte, the aspect of the country is entirely changed, and a comparative barrenness takes place.

Here commences the

II.—Or less fertile region, lying between the Saline desert of Upper Platte, and the last named fertile prairie region of Kanzas river.

Surface and apparent geological features.—The land having risen to an elevation of about 900 or 1000 feet, it loses that pleasing undulated surface, characteristic of the western prairies. The tabular plains commence, though at first much interrupted by abrupt, steep ravines, and intervening ridges. They are composed of a coarse gravel, bedded on a massive layer of boulders of every sort of so-called primitive rocks, especially granite, and these again rest on recent horizontal sandstone, which latter overlays masses of bituminous shale of amazing depth. Piles of that sandstone are met with here and there, variously inclined, having been evidently dislodged from the level position, denuded of the soil by the weather, and are now walled at their bases with the accumulated boulders. In deep abrupt ravines, the water-courses are on bituminous shale, while the steep sides present to view the horizontal interrupted layer of the new sandstone stratas. This sandstone is of a coarse grain, and argillaceous cement, the latter preponderating; hence it is easily decomposed by the action of the atmosphere.

General features of the vegetation.—The woods are now reduced to groves only of *Populus Canadensis*, Mx., *Ulmus Americana* and *fulva*, *Negundo fraxinifolium* and *Celtis occidentalis*. A very small grove of *Quercus macrocarpa* occurs at the most northerly spur of the Black Hills, almost out of this region. The thickets consist of *Rhus glabra*, *Rosa parvifolia*, *Amorpha frutescens*, *Salix longifolia*, and *Rubus occidentalis*. Among the grasses, *Avenaceæ* and *Festucaceæ* take the lead, while the hitherto abundant species of *Andropogon* and *Pollinia* disappear to the west. *Agrostideæ* increase, as also *Hordeaceæ*; and the *Leguminosæ* and *Astragalinæ* prevail in the flora. Conspicuous representives may be seen of many families, mostly of one genus only! Thus of *Liliaceæ*, *Yucca;* of *Pediculares*, *Castilleja*; of *Scrophularinæ*, *Pentstemon*; of *Solaneæ*, *Solanum triflorum*; of *Hydrophylleæ*, *Ellisia*; of *Convolvuli*, *Evolvulus*; of *Cinerocephalæ*, *Carduus argyrophyllus*, Torr.; of *Papaveraceæ*, *Argemone*; *etc.* White and scarlet are predominant among the herbaceous plants; lilac and purplish colours exist only in the species of *Pentstemon.*

The Platte or Nebraska River is shallow and rapid with an average breadth of a mile, and presents within this region most picturesque scenery from the innumerable small verdant islands which appear as if sailing in its rapid stream. Most of these islands have at least one tree in their centre, and some of them small groves, either of *Poplar*, *Elm* or *Negundo*, their luxuriant branches bending in the wind. Along the banks scarcely a tree is to be seen, except at the mouths of rivers and junctions of rivulets. The thickets of *Salix longifolia*, *Amorpha frutescens* and *Rosa parvifolia*, when all in bloom, afford a pleasant contrast to the adjoining trackless drifting sandy ranges of the valley, formed by local currents

Chrysopsis villosa. The more fertile parts of the valley still present *Pentstemon grandiflorum*, and *Batschia Gmelini*, with *Lathyrus palustris*, *Sisyrinchium anceps*, *Pentst. pubescens*, *Potentilla anserina*, *Zigadenus*, *Aster*, and *Solidago*, in moist places.

The sand hills are held together by the long binding roots of *Psoralea arenaria* and *Rumex venosus;* in part, also, by *Glycyrrhiza lepidota* and *Cerasus pumila*, which latter seems to me a true plum, as regards the fruit; sometimes it grows only a span high, with a dozen fruits of the size of a sloe. Out of these thickly clustered masses springs the robust *Carduus argyrophyllus*, Torr.? with its large, white, and very fragrant heads of flowers. Most showy are the thyrses of the *Rumex venosus*, of which the large winged fruits become scarlet towards maturity. The singular and transient flora of these sandhills disappears in less than four weeks, when everything dries up, and no vegetable life remains, except masses of *Orobanche*, growing out of the roots of roses and the *Psoralea* or *Glycyrrhiza*.

But it is to the gravelly plains and ridges that the attention of the botanist is chiefly attracted; especially the wide extending ridges, which, wherever they appear, give shelter to the rarest and choicest plants of the surrounding country. These ridges prevail along the whole eastern slope of the Rocky Mountains; alternating with almost every geological formation; and may be traced across the Missouri, about the mouth of Platte river eastward, in an irregular interrupted line to Lake Michigan, and southward likewise to the Ozark Mountains of Missouri; perhaps, also through Arkansas to Texas.

The plants of these ridges bear a resemblance to the Subalpine Flora, with somewhat of the robustness of those species which inhabit the plains below. There are no grasses with creeping roots, except the simple *Panicum Muhlenbergii*, in this region, and on the upper Missouri; but several beautiful *Gramineæ* grow only here, amongst which are *Aristida pallens* and *Agrostis brevifolia*. *Atheropogon oligostachyon* and *Ses-*

leria dactyloides are abundant. The most conspicuous plants are *Mammillaria simplex*, *Bartonia ornata*, *Lupinus pusillus*, *Sida coccinea*, *Gaura coccinea*, *Pentstemon albidum* and *grandiflorum*, *Astragalus hypoglottis*, *assurgens* and *caryocarpus*, *Echinacea angustifolia*, *Lygodesmia juncea*, *Psoralea esculenta*, *canescens* and *Glycyrrhiza*, *Evolvulus argenteus*, *Polygala alba*, *Œnothera serrulata*, *Diplopappus pinnatifidus*, Hooker, *Calymenia angustifolia*, *hirsuta* and *decumbens*, *Aster sericeus*, *Solidago nemoralis*, *Schrankia uncinata*, *Erysimum asperum*, *Linum multicaule*, *Kentrophyton*, *Phacæ*, *Oxytropides*, *&c. &c.* The *Mammillaria* occurs in varieties with white, rose and purple flowers; *Polygala alba*, white, pale pink, and violet; *Echinacea*, white and pale purple. *Schrankia* grows only on the slopes, prostrate, full of bright purple flowers, its leaves are irritable, like those of *Mimosa pudica.*

Several of the above named plants may be seen also in the plains, which, however, are characterized by others more robust, amongst which *Helianthus atrorubens* and *Echinacea purpurea* are conspicuous, *Heliopsis scabra*, *Columnaria pinnata*, *Rudbeckia columnaris*, with yellow and deep fuscous-purple rays. *Allionia nyctaginea* grows in stony places. On sunny slopes I observed *Petalostemon candidum* and *violaceum*, *Coreopsis delphinifolia*, *Psoraleæ*, *Astragali*, *Phacæ*, *Kœleria*, *Panicum Muhlenbergii* and *Polypogon glomeratus.*

trance, around which a heap of naked earth forms a little elevation, from which the inmates survey the *village.* A small species of owl lives peaceably with the marmot; it is a restless little bird, apparently on good terms with the marmots, but ever on the alert, for fear of the rattle-snake; which, strange to say, inhabits the same quarters, but is probably an intruder. This owl seems to have as good a sight in the noon-day sun as its European kindred have at night; for I have remarked it moving about all day, passing and repassing from one burrow to another. When I visited these habitations at sunrise, I never failed to see alternately marmots, owls, or rattle-snakes peeping out of the apertures. In a plain at Shienne River, on the upper Missouri, I found one large village deserted by marmots, and tenanted solely by rattle-snakes; the latter having probably overpowered and destroyed the legitimate occupants, or driven them out.

On the earth-heaps of these burrows, I saw *Solanum triflorum*, and never elsewhere, it grows prostrate in patches; *Œnothera pinnatifida*, *Sida coccinea* and *Lupinus pusillus* are here also together.

The scarlet colour, with which tracts of thousands of acres may be seen glowing during the months of May or June, is occasioned by the *Sida coccinea;* the white, by *Œnothera pinnatifida* and *coronopifolia;** blue and purple by several species of *Pentstemon*, and yellow by the dense masses of *Helianthus tubæformis* and *petiolaris.*

Before closing the description of this region, I must mention the great inconveniences to which the traveller is exposed in it; foremost come the incessant rains during the months of May and June, which fall so heavy, that the water runs an inch deep upon the ground, accompanied too with violent winds. Next are the mosquitoes during calm nights, and swarms of blood-thirsty horse-flies by day, plaguing alike man and beast incessantly. Not less annoying are the night watches, necessary here to guard the animals from the marauding Pawnees, especially after a hard journey and in bad weather. However, after weary day and sleepless night are past, when once the morning sun makes its appearance, all troubles are over and almost forgotten. Every one is engaged in breaking up camp, talking about the most probable adventures of the coming day; some prepare to hunt the buffalo or bison, some the antelope, and others to go in search of strayed horses, &c. Perhaps a bellowing band of bisons rushes across the river, or a troop of wild horses appear prancing in the morning sun, and dashing over the plains, or a capering antelope is seen on the brow of the hills, or something else to add excitement to the scene. Quickly the whole cavalcade has mounted again, and proceeds onward through that inhospitable and dangerous wilderness.

(*To be continued.*)

Proposed Botanical Journey of MR. ALEXANDER GORDON, *to the Mountains of* TEXAS, &c.

Not only did Mr. Charles Geyer accompany Sir William Stewart into the Rocky Mountains, but an equally indefatigable Scottish Botanist was of the party, Mr. Alexander Gordon, who had been long resident in the United States, and had thence transmitted many rare seeds and roots to Europe. On his return from that journey, he lost by shiption that misfortunes still attended his wanderings, so that he was detained at Mobile in Alabama much longer than he could have wished. The circumstances are these, as detailed in his letter from that place, dated December 23, 1844.

"I have to inform you that I have as yet proceeded no further than Mobile, owing to causes which I am about to explain. On leaving New York, I proceeded by way of Philadelphia, and thence crossed the Alleghany mountains to the head of the Ohio at Pittsburg, and descended that river to its junction with the Mississippi, and was proceeding down the latter noble stream to New Orleans, when our steam-boat, the "Belle," a splendid new vessel, was run into at midnight, and sustained such injury that she sunk in a few minutes. By great good fortune, I caught hold of a plank which kept me above water, till I was picked up by the small boat belonging to the vessel which had so damaged us, but I lost everything except my shirt and trousers, and four dollars that were in my pocket.

"This calamity has prevented me from prosecuting my intended tour for the present; but ever since my arrival at Mobile, I have been actively engaged in making a large collection of such southern plants as I am certain will meet with a ready market at New York, and as these will be despatched at once, I may naturally look for payment by February, and so be put into a position to pursue my route early in spring. And I am really disposed to hope that little time is lost by the delay, for whether I go, in the first place, to the Texian Mountains; or, what now seems more probable, to Santa Fè; in either case, I shall arrive soon enough for the spring Flora. If I decide on the latter course, I shall join the regular Traders at the City of St. Louis, and avail myself of their protection to Santa Fè: they go annually, and therefore no disappointment can be anticipated on that head.

"By an opportunity that now presents itself of forwarding growing plants, I shall send you specimens of what appears to me the *Sarracenia Drummondi*, which I understand you have never seen in flower; along with two other species of the genus, that do not seem to me accurately described. This neighbourhood is rather rich in plants, and if you desire to have any, and let me know at once, there will be ample time to collect and forward them in due season."

Mobile, April 17, 1845.

"I am honoured with your letter, dated February 10, and beg to thank you for the interest you are pleased to express in my affairs. In the first place, I have to inform you that the untoward circumstances and heavy loss sustained by me while descending the Mississippi, as mentioneded in my last communication, have, notwithstanding my most strenuous efforts, compelled me to defer for a few months longer my tour to the mountains of Texas and Santa Fè, (for I purpose, if I live, visiting both.) Do not, I entreat you, consider me lukewarm in the matter, for it is with the greatest reluctance I submit to delay, even for that short period; but poverty is a powerful check-rein, and at present there is no alternative. I have, however, pleasure in informing you that two months ago, I took the superintendence of a gentleman's garden at Mobile, reserving to myself the privilege of dedicating what time I might find requisite to collecting plants, seeds, and specimens. I am perfectly aware that the Flora of this portion of America is too well dant and fine in the neighbourhood. A proper regard to the quantity of moisture is the only point that requires attention.

"Some of the genera you mention have not fallen under my observation hereabouts; *Trillium*, for instance; while others that are not named by you are abundant. I may instance the genus *Liatris*, great favourites of mine, and of which I can send you six or eight species. For the last few weeks, I have been enchanted with the profusion of *Gelsemium sempervirens* and *Pinguicula lutea*, the former hanging in rich festoons from almost every tree and shrub, and the latter presenting the eye with all the richness of a golden carpet. I think there is another and undescribed species here of *Pinguicula;* but all my books having been lost in our wreck, I cannot be positive; a *Sarracenia*, too, differing in many points from *S. purpurea*, to which, however, it is much allied.

"Perhaps I may be able to send some of the specimens by a ship from hence in the end of June: the seeds and growing plants will go in October or November.

"P.S.—Since writing the above, I have been to a distance of forty miles, to collect *Sarracenia Drummondi.* Only imagine a space of forty acres, or more, a dense mass of that splendid plant!"

It is impossible not to admire the ardour with which Mr. Gordon thus carries on his botanical investigations in North America; nor is this, we know, by any means the first time, that, when circumstances required it, he has hired himself out as a gardener for some months, or a year, thereby earning, with the sweat of his brow, the scanty means for prosecuting his favourite pursuit; and we trust that when his Alabama plants arrive, (and they may be expected about the commencement of the next year) purchasers will be found for them: thus enabling him to collect the more extensively and more successfully in the mountains of Texas and of North Mexico.

Mr. Heward, Young Street, Kensington, is authorized to receive names of any persons who desire to have plants or seeds, from the regions Mr. Gordon visits.

Heldreich's Oriental Plants.

Letters have been received from M. Boissier, giving an excellent account of Heldreich's herborizations during the present summer. He was lately in Cilicia, collecting on the flanks of Mount Taurus, "où jamais Botaniste n'a mis le pied." Thence he will proceed to the neighbourhood of Karaman and Iconium. We earnestly recommend those who have not already sent in their names as subscribers, but who wish to possess sets of these valuable plants, to lose no time in doing so. This can be done, as stated at p. 41 of the present volume of the Journal, through M. Reuter, rue de Constance, n. 136, à Genève.

Mr. Ibbotson's Plants of the North of England.

If we have Botanists carrying on their pursuits in foreign regions, so we can boast of indefatigable and most meritorious collectors at home. Mr. H. Ibbotson, of Gruthorpe, Ibbotson gives more specimens of the rarer species, and fewer or single samples, of the common kinds. He is indeed most worthy of encouragement by every lover of Botany. Among the "plantæ rariores" to be thus offered, are *Carex paradoxa*, *Scheuchzeria palustris*, *Lysimachia thyrsiflora*, *Veronica triphyllos*.

Mr. Gardiner's Scotch Plants.

Equally meritorious with Mr. Ibbotson is Mr. Gardiner, and equally indefatigable in collecting and offering upon the most moderate terms, the rare vegetable productions of Scotland, especially of that rich and classical district, the Clova mountains. We have more than once, in the pages of this Journal, called attention to these specimens; and we may add, that Mr. G. is still extending his researches in the interesting field, and has it in contemplation to publish, during the ensuing year, a second series of "*Botanical Rambles in Braemar*,"* and also a *Flora of Forfarshire:* which Flora he proposes to accompany and illustrate with a series of 200 species of the rarer and more peculiar plants of the district.

Bourgeaud's Plants of the Canaries.

It is, perhaps, not yet generally known, that M. Bourgeaud, a zealous Botanist of Savoy, is, under the auspices, and aided by the local knowledge of the Canary Islands possessed by Mr. Webb, gone to visit them with a view to collect the plants, of which we are glad to learn that a few sets will be made up for sale. Already some cases have arrived at Paris, and we shall be happy to be able to announce their distribution.

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* See p. 208 of the present volume of this Journal.

Contributions to the Botany of SOUTH AMERICA. *By* JOHN MIERS, ESQ., F.R.S. F.L.S.

(*Continued from p.* 371.)

The stem is almost 4-angular; the leaves are nearly amplexicaul at base, where they are fixed obliquely on the stem, the lower edge being decurrent; they taper gradually upwards, and are linearly acuminate, are about 1½ in. long, and 3 lin. broad at base; the younger ones are pubescent, but they soon become glabrous; the peduncle is compressed, 6-7 lin. in length, and together with the calyx is covered with long, soft pubescence; the calycine tube is turbinate, pentagonous, 4 lin. long, with five equal erect, triangular, acuminate lobes of equal length; the corolla is about the size of that of *S. paradoxa*, with a broad campanulate border of a blue colour. The nuts are scarcely as large as rape seeds, black, deeply foveolated with very sharp angles; on one receptacle I found 35 distinct nuts, all 1-celled.

5. Sorema *lanceolata* (n. sp.):—herbacea, prostrata, incano-pubescens; caule subangulato; foliis geminis lanceolatis semiamplexicaulibus, basi oblique adnatis, hinc decurrentibus; floribus in axillis solitariis, speciosis, cæruleis.—Chile ad Coquimbo. *v. s. in herb. Hooker*, (*Cuming*,

decurrentibus, parce et molliter pubescentibus; floribus speciosis solitariis, axillaribus, cæruleis.—Chile ad Coquimbo *v. s. in herb. Hooker*, (*Cuming.* n. 887).

This is evidently a succulent prostrate plant, with a fleshy stem 3 lin. in diameter, and with axils 1 in. apart; the leaves are 3 in. long, ½ in. broad, spathulate and decurrent; the pedicel is 1¼ in. long; the calyx is altogether 9 lin. long, the linear segments measuring 5 lin.; the corolla is 1½ in. long, with a broad campanular blue border as in *S. paradoxa.* Doctor Lindley mentions having found in one receptacle 7 drupes, viz: 1-4-celled, and 6-1-celled, in all ten cells: in the one I examined I found 4 nuts, each 6-celled, 1-3-celled, and 8-1-celled, in all 13 nuts, with 35 cells; it is worthy of remark that all the seeds do not produce a perfect embryo.

7. Sorema *linearis* (n. sp.):—herbacea, glanduloso-pilosa, demum subglabra; ramulis angulatis; foliis linearibus, obtusis, hinc decurrentibus; floribus solitariis, axillaribus. —Chile ad Conceptionem. *v. s. in herb. Hooker.* (*Bridges*, n. 1323).

This is probably a procumbent plant; the younger leaves are covered with dense glandular tomentum; they are decurrent on the stem as in the preceding species, 1⅛ in. long, 2-2½ lin. broad; the peduncle is ½ to ¾ in. long; the calyx is short, 5-angular, with lanceolate segments, altogether 5 lin. long, and covered with soft pubescence; the corolla is of the same shape, but smaller than that of *S. paradoxa*, and in the dried state is of a yellow colour. In one case, I found 2 of the nuts 3-celled, 3-2-celled, 15-1-celled, in all 6 nuts with 27 cells; in another instance I observed 1-4-celled, 1-3-celled, 3-2-celled, and 5-1-celled, in all 10 nuts with 18 cells.

From the above details it may be inferred that as the nuts differ so constantly in their number, and as in each nut the number of cells is so uncertain, differing even in the same plant, this feature can no longer be considered a good generic character. I have examined the plants above described. with much attention, and cannot perceive any mark to distinguish *Alona* from *Sorema*, except that in the former the species are all erect plants with woody stems, and fasciculate, terete, or 3-gonous leaves, while those of the latter are herbaceous, prostrate plants, with geminate broad, fleshy leaves, which in every case appear decurrent on the stem. I have had no opportunity of examining more than one out of the 5 species of *Nolana* enumerated by Dr. Lindley, and that has not enabled me to appreciate the distinction between that genus, *Sorema*, and *Alona*. In *Nolana* the species are all succulent prostrate plants, mostly with geminate leaves, which are both petiolated, and are not decurrent on the stem, as in *Sorema;* in all the 3 genera the flowers closely resemble each other; in *Nolana tenella*, Lindl., I found 5 nuts, which were either 1-3-4 or 5-celled; if no difference then can be detected in the flower or the seeds, habit alone remains to draw a line of distinction between them, and a question arises whether habit alone will be considered sufficient to separate these plants into 3 genera. Should they all verge into *Nolana*, this genus might then with propriety be divided into 3 sections:—1. *Eunolana*, comprising the 5 species alluded to; 2. *Sorema*, containing the 7 species above enumerated; and 3. *Alona*, embracing 8 species, viz 1. *A. cœlestis*, 2. *A. rostrata*, 3. *A. obtusa*, 4. *A. glandulosa*, 5. *A. carnosa*, and 6. *A. baccata* of Dr. Lindley, together erectis, lineari-acuminatis; corollæ limbo amplo campanulato; nucibus paucis, magnis, baccatis, plurilocularibus.—Chile ad Conceptionem. *v. s. in herb. Hooker.* (*Bridges*, n. 1325).

This is apparently a low-growing suffruticose branching plant, distinguished by its numerous close fascicles of narrow linear leaves, which are about ½ in. long. and ⅓ a lin. wide, somewhat broader towards the apex, the margins being rolled back on the mid-rib, so as to assume a perfectly terete form, they are covered with dense short, glandular tomentum. The flowers are about the size and shape of those of *Sorema paradoxa.* The calyx is funnel-shaped, about ⅓ inch long. the acuminate lobes being about one third of its length, and somewhat curved outwards, as in *A. cælestis*, and *A. rostrata.*

8. Alona *microphylla* (n. sp.) :—fruticulosa, ramulis tortuosis nodosis; foliis parvis, fasciculatis, confertis, spathulato-oblongis, carnosulis, viscidulo-pubescentibus; floribus solitariis, mediocribus, calyce campanulato, ad medium 5-partito, lobis late triangularibus, pubescenti, pilis glandulosis, aliisque articulatis; corolla pubescenti, limbo amplo campanulato, staminibus styloque exsertis.—Chile ad Conceptionem. *v. s. in herb. Hooker.* (*Bridges*, n. 1330).

This is another low growing suffruticose species, with very much the habit of some of the small-leaved *Lyciums.* The stem and lower portion of the branchlets are tortuous, bare, and knotty; the leaves are close, about 3 lin. long, ½ to 1 lin. broad, spathulate, nerveless, fleshy, and covered with short, viscid, glandular hairs. The peduncles are ciliate, ⅓ in. long; the tube of the calyx is 2 lines in length, as well as in diameter, having 5 equal, broad, triangular, erect lobes, 2 lin. long; the corolla is 1 in. long, broadly campanulate, with 5 rounded lobes.

Since the former part of these remarks upon the genus *Sorema* was printed, I have seen in a living state a cultivated species that corresponds with the *Nolana atriplicifolia* of

Sweet, *loc. cit.*, which appears to me only a more luxuriant form of *Sorema paradoxa:* I consider, therefore, the two species to be identical, and the stated place of the origin of the former (Peru), to have been mistaken for that of Chile.

DOLIA, *Lindl.*

This genus was proposed by Prof. Lindley for a plant brought by Mr. Cuming from Chile, and which I obtained many years ago from Dr. Miller, of H.M.S. Dublin, who collected it in Concepcion. Although unquestionably belonging to *Nolaneæ*, it has more the habit and inflorescence of a *Fabiana*, from the flower of which it is scarcely distinguishable. The following is offered as a more extended generic character than that given by its distinguished author.

DOLIA Lindl.—*Calyx* persistens, tubulosus, limbo 5-partito, lobis lineari-acuminatis, carnosulis, obtusiusculis. *Corolla* hypogyna, fere hypocrateriformis, tubo ore ampliato, limbo ad basin 5-fisso, lobis brevibus rotundatis apice vix mucronulatis. *Stamina* 5, inæqualia, inclusa, rarius exserta; *filamenta* erecta, medio corollæ inserta, filiformia; *antheræ* basifixæ, 2-lobæ, lobis rotundatis, longitudinaliter dehiscentibus. *Discus* hypogynus, carnosus, substipatus, margine 5-lobo libero gynobasin cingens. *Ovaria* 8-10, coadu-

This is an erect low-growing shrub, with slender woody stems, and numerous short flexuose branchlets, which are densely covered with long white cottony hairs; the leaves are fasciculated, linear, spathulate with fleshy rounded summits, pubescent, scarcely 1 line in length; the flowers are terminal, solitary, and erect, hardly more than ½ inch long, and 1½-2 lines diam.; the calyx is 1⅓ line long; 5 to 8 small drupes become matured in each calyx, in the specimen I examined I found 6, of which one was 2-celled, and five were 1-celled, with a single seed in each cell; the nuts are ovoid, rounded, somewhat angular, the basal point of attachment being small, and the opening into each cell marked by a round scar or areola, as in Sorema.*

2. DOLIA *salsoloides*, Lindl.—ramis calvis junioribus pube brevissima sparsis; foliis fasciculatis linearibus fere glabris, calycis dentibus linearibus, obtusis, subpubescentibus, tubo corollæ fere æqualibus.—Chile. (*Macrae*).

The leaves of this species are 4 lines long, ¼ line broad, slightly ciliated, or exhibiting under a lens a few scattered articulated hairs; the peduncle is about the length of the leaves; the calyx is about 3 lines long, divided half way down into 5 segments, which are linear, obtuse, fleshy, and sparsely covered with short pubescence; the corolla is about 4 lines long.

3. DOLIA *clavata* (n. sp.).—omnino calva; foliis fasciculatis, carnosulis, lineari-spathulatis, imo pulvinatis; calycis dentibus linearibus, obtusis, tubo corollæ dimidio brevioribus; staminibus exsertis, filamentis basi sericeis.—Chile ad Conceptionem. *v. s. in herb. Hooker*. (*Bridges*, n. 1324.)

This species has much the aspect of the last, but the leaves are broader, spathulate and rounded, 3 lines long, and 1 line wide, they are quite glabrous and fleshy; the peduncle is of the same length as the leaves; the calyx about 2 lines long, is divided halfway down, its segments being linear, obtuse,

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* A figure of this species will be shown in Plate 11 of the "Illustrations of South American Plants."

and somewhat thickened at the apex; the corolla is about 6 lines long, with oblong reflected segments, the stamens being exserted, the filaments arising about the middle of the tube, from as many dense velvety tufts, above which they are glabrous, as is likewise the style; the ten ovaries are arranged in 2 series on a conical receptacle, the margin of the surrounding disc being erect and obsoletely lobed.

3. Dolia *leptophylla*, (n. sp.):—fruticulosa, tota pubescens, ramulis teneris fusco-cottoneis foliis fasciculatis, lineari-teretibus, incurvis; calyce parvo, lobis triangularibus, attenuatis: corolla cærulea, tubo inferne gracili, superne ampliato, campanulato, lobis parvis rotundatis; nucibus rotundatis, nigris, rugosis.—Peruvia. *v. s. in herb. Hooker. Cuming, n.* 956.

The above specimen is small, apparently a portion of an erect low-growing shrubby plant. The leaves are barely ½ an inch long and half a line broad, covered with dense grey tomentum: the peduncle is scarcely 2 lines long; the calyx is small, only 1½ to 2 lines in length, with triangular erect teeth; the corolla, about 8 lines long, is very slender at base, spreading above in a bell-shaped tube, with a 5-lobed margin. The seeds are black, shining, rounded, covered with rugous prominences: on one receptacle I observed 1 of the nuts to be 6-celled, 1-4-celled, 1-3-celled, 2-1-celled, in linear acute segments, is scarcely more than a line in length. The tube of the corolla, which is slender below, swells considerably above.

ALIBREXIA.

Under this name I propose a new genus for a prostrate plant that I found growing upon the rocks in the Caleta of Concon in Chile, in the year 1823, where it was constantly exposed to the spray of the sea, whence its name, from *αλιβρεξῶ, mare madefacio.* It differs from *Nolana* and *Sorema* by having 10 carpels supported upon a distinctly stipitate disc quite free from the calyx, by a more tubular corolla with a border cleft to the base into 5 very small rounded reflexed lobes as in *Dolia,* and by its drupes with rounded oval nuts umbilicate at base, the perforation not being wholly filled up by a woody operculum or strophiole-like process, and by the constant adhesion of this process to the testa. It differs from *Nolana* and *Alona,* in having a somewhat fleshy corolla, with a small 5-lobed border, not one that is broad, deep and campanular. From *Dolia* it is distinguished by its herbaceous, fleshy and prostrate habit, not being suffruticose with a decidedly woody erect stem: by its stamens arising from the base of the corolla, not simply fixed in the middle of the tube: by its calyx being cleft nearly to the base, by the greater number of its ovaries, by its nuts being quite rounded, and narrowed at base to a slight ring around the areolar cicatrice. It differs from *Aplocarya* (a genus hardly distinct from *Dolia*) in the want of the very conspicuous, large, cicatrized base of its drupes, to which a portion of the withered receptacle and disc often remains attached, in having 10 distinct ovaria, and a more infundibuliform and less hypocrateriform corolla, and by its stamens not being exserted. It differs from all others by its ramified and stellate, not simply articulate pubescence. As in *Dolia* and *Aplocarya,* the tube of the corolla is quite free, both from the fleshy disc and the calyx, but in *Alibrexia* it falls off by a horizontal line parallel with the disc, leaving it surrounded

by a hollow cup. The following is the outline of its generic character.

ALIBREXIA (gen. nov.)—*Calyx* persistens, utrinque dense tomentosus, 5-partitus, lobis linearibus vel 3-angularibus obtusiusculis erectis. *Corolla* hypogyna, inferne tubulosa, superne tubuloso-campanulata, limbo ad basin 5-partito, laciniis parvis rotundatis reflexis. *Stamina* 5, inæqualia, inclusa; *filamenta* imo tubi orta, basi villosa, hinc subulata graciles, inæquales, tubo corollæ breviores: *antheræ* basifixæ, oblongæ, 4 sulcatæ, 2-loculares, longitudinaliter dehiscentes. *Discus* hypogynus breviter stipitatus, patelliformis, margine crasso, 5-lobo, 10-crenato, gynobasin centralem cingens. *Ovaria* 10, distincta, circa gynobasin conicam biserialiter aggregata, et angulo interno affixa, 1-ovulata. *Stylus* centralis, 5-striatus, longitudine staminum. *Stigma* clavatum, 5-lobum. *Drupæ* (alteris abortivis vel coalitis) 5-8, distinctæ, carnosulæ, demum siccæ; *nux* ovoideo-rotundata, subossea, 1-4 locularis, loculis 1-spermis, basi imminuto 1-4-foveolato, fovea operculo semi-clausa. *Semen* solitarium, reniforme, compressum, testa tenui operculo persistente affixa. *Embryo* filiformis, intra albumen carnosum cyclicus, *cotyledonibus* semiteretibus, *radicula* ad hilum spectante.

Plantæ *suffruticulosæ Chilenses, prostratæ, succosæ, in saxis*

fleshy, and covered on both sides with dense, short, dark grey tomentum: they are about 8 lines long, and barely a line in width: they are attached to the stem by a small glabrous pulvinate gland: the peduncle is slender, half an inch long; the calyx is 2 lines long, cleft nearly to the base, with narrow linear segments tapering upwards, it is tomentous both within and without. The corolla is barely half an inch long, slender within the calyx, it swells above in a somewhat campanular form, is of a pale lilac colour, somewhat fleshy, and slightly pubescent outside; the border is narrow, and divided to its base into 5 short, rounded, reflected lobes, having at the apex a minute toothlet: the stamens are wholly included, and are somewhat unequal in length, the filaments slender, tapering, and glabrous, arise out of dense hairy tufts in the base of the corolla. The disc is distinctly stipitate, cup-shaped, and quite free both from the corolla and calyx, its border nearly erect, is formed of 5 confluent lobes, with a margin divided into 10 distinct crenatures; the gynobase arises in a conical form within the centre of this cup, the intermediate cavity being filled by the carpels which are arranged in 2 series, and are attached by a ventral, and almost basal point to the gynobase: from the centre of this arises the style, which is columnar, 5-grooved, glabrous, and surmounted by a 5-lobed, hollow, clavate stigma. The drupes are small and fleshy, enclosing an ovoid rounded nut, which is of a more woody texture than most of its congeners: this is usually 1-celled, sometimes 2-celled, the base of each cell being marked by an areolar cicatrix, which is partly hollow, the bottom of the cavity being filled up by the strophiole-like process that remains attached to the testa of the included seed. The testa, smooth, somewhat membranaceous, and of reticular texture, encloses the albumen, which is fleshy, and not very copious: in this is imbedded the filiform embryo, whose semiterete cotyledons are bent round in a nearly circular form, while the terete radicle, which is only slightly curved, and somewhat thickened towards its extremity, terminates at a point close to the attachment of the process before mentioned.*

2. ALIBREXIA *tomentosa*. Alona tomentosa, *Lindl. Bot. Reg.* 1844, *sub. tab.* 46.—prostrata: foliis lineari-oblongis, spathulatis, confertis, incano-tomentosis; floribus solitariis, calyce tomento aurantiaco utrinque vestito, laciniis 3-angularibus, erectis, corolla pubescenti, alba.—Chile, Valparaiso.—(*v. s. in herb. Hooker. Cuming, n.* 121. 241. *Bridges, n.* 481. 328.)

This species also grows on maritime rocks, and is distinguished by its longer, broader (in proportion to their length) and more incanous leaves, by its corolla not quite so fleshy and whiter. The leaves are sometimes 13 lines long, and nearly 2 lines broad, densely covered with short white branching almost stellate hairs, the base of the petiole is enlarged, and adheres to the stem by a concave pulvinate gland, which is almost glabrous, and much more conspicuous than in the last mentioned species: the calyx is covered, within and without, by a dense orange coloured tomentum, and its lobes are broader and more triangular.

3. ALIBREXIA? *revoluta*. Nolana revoluta *R. & P.* 2. 8. *tab.* 113. (*male depicta*). Alona revoluta *Lindl. Bot. Mag.* 1844, *p.* 46.—prostrata, incana, stellato-tomentosa, ramulis

about ½ in. long; the calyx is campanular about 4 lines long with 5 equal, 3-angular lobes; the corolla is tubular below, somewhat swollen at base around the disc, above it swells into a somewhat campanular form, with 5 short revolute lobes, it is about an inch long, of a bluish violet colour, pubescent and apparently not marked with the radiate nervures so conspicuous in Nolana and Sorema. The contracted portion of the tube of the corolla is pubescent within, whence the stamens arise, the filaments are dilated, tapering upwards, smooth, and unequal, the anthers are oval, bluish, and included within the mouth: the style is of equal length. The disc has a 10-lobed border, and supports 8 to 12 ovaria. The drupes are fleshy, and vary in size. I found in one case five nuts, each 3-celled, and seven 1-celled—in all twelve nuts with 22 cells: in another instance, I observed three nuts each 4-celled, two 3-celled, one 2-celled, and two 1-celled, in all eight nuts with 22 cells. The whole plant is densely covered with short greyish tomentum, the hairs of which, when magnified, appear sometimes articulate, but most generally stellate and stipitate, a form of pubescence peculiar to this genus. I confess, however, that I feel some hesitation in referring this plant here, as its corolla more nearly approaches that of *Sorema* and *Alona* in size and colour, but in its general aspect, peculiar habit, the size and shape of its leaves densely covered with remarkable tomentum, as well as in the form of its nuts, it greatly resembles the two preceding species.

GRABOWSKYA.

This genus was founded by Prof. Schlechtendahl (Linn. 7. 72) upon the *Ehretia halimifolia* of L'Heretier (Stirp. p. 45. tab. 23). By Linnæus and succeeding Botanists, it was assigned to *Lycium*, without doubt on account of the similarity of its flowers and habit to that genus. Schlechtendahl, for the same reasons, preserved his new genus *Grabowskya* among *Solanaceæ*, but Nees von Esenbeck restored it to *Ehretiaceæ*, because of its unilocular 4-celled ovarium, becoming a nut, a character much at variance with the bilocular ovarium with its many seeded placentation on the dissepiment, which is the constant attribute of *Solanaceæ*. Dr. Arnott (Linn. 11. 484) who added 2 new species, supported the views of Schlechtendahl in assigning it a place among *Solanaceæ*, on account of its curved embryo, a view also maintained by Doctor Lindley, who figured a species in the Botanical Register tab. 1985, under the name of *G. Boerhaavifolium*, which I have designated under that of *G. Lindleyi*. Finally, however, Prof. Endlicher in his Genera Plantarum, No. 3745 has again placed it in the albuminous section of *Ehretiaceæ*, a disposition that can hardly be supported, when it is remembered that these have an embryo, either straight, or but slightly curved, broad foliaceous cotyledons, and a small superior radicle, and that they all possess moreover a totally dissimilar habit; *Grabowskya*, on the other hand, has a long, slender, filamentous, and cyclical embryo, with semiterete cotyledons, as long as, and even more slender than the radicle, which points to the base. My own observations lead me to differ somewhat from the views of these distinguished Botanists, and to consider it, as stated in p. 367, rather as forming a subtribe of *Nolanaceæ*, the reasons for which will presently be shown.

suffulta, 2-pyrena, pyrenis osseis, 2-locularibus, loculis 1-spermis, basi perforatis. *Semina* oblongo-obovata, compressa, facie subplana, dorso convexa, testa imo in strophiolam carnosam aucta, apertura basali pertensa. *Embryo* filiformis, intra albumen carnosam cyclicus, radicula tereti ad hilum spectante, subrecta, cotyledonibus semiteretibus, arcuatis.

Frutices *Andicoli vel Bonariensis ramosissimi, spinis axillaribus alternis, Lycii habitu:* folia *alterna, solitaria, vel gemina, aut fasciculata, petiolata:* flores *pedunculati, solitarii vel parce racemosi, aut axillis approximatis paniculam terminalem simulantes.*

1. Grabowskya *Boerhaavifolia* Schlect. *loc. cit. Ehretia halimifolia* L'Herit. *loc. cit. Lycium Boerhaavifolium,* Linn. (non Lindl.) *Lycium heterophyllum* Murray, *in Comment. Gott.* 6. *tab.* 2.—foliis alternis, petiolatis, utrinque attenuatis, petiolo gracili: panicula corymbosa terminali ex ultimis turionibus, pedicellis imo bracteatis, bractea parva lineari acuta: calyce 5-partito, laciniis subulatis, simplicibus, acutis.—Peruvia, *v. s. in herb. Hooker.*

This character is drawn from the description of L'Heritier, which I have compared with a specimen in the herbarium of Sir W. Hooker.

2. Grabowskya *duplicata,* Arn. *loc. cit:* Hook. *Bot. Mag. tab.* 3841: *Ehretia duplicata,* Nees ab Esenb.—foliis longe petiolatis, orbiculari-obovatis, basi cuneatim attenuatis, apice acute ac breviter acuminatis, calyce campanulato, ore subintegro, membranaceo, mucronibus 5, subulatis, infra marginem extus notato, maturescenti fructu parum aucto, tunc dentibus quasi biserialibus, interiori obtuso, exteriori subulato crasso, multoties longiori.—Esquina de Medrano, Provinciæ Cordovensis (a Bonaria 400 m. p. intervallo) mihi detecta: Bonaria (Gillies et Tweedie).

This species has been very faithfully delineated by Sir W. Hooker as above cited, and is remarkable for the peculiar form of its calyx.

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Nees ab Esenb. —[illegible] [illegible] petiolatis, cuneatis, obovato-oblongis. [illegible] [illegible] 5-partito, laciniis ovalibus, obtusis.—In [illegible] [illegible] [illegible] altitudine 3000 ped. A Men-[illegible] [illegible] [illegible] [illegible] 1500 ped.—Verna-[illegible] [illegible]

In the form of its calyx and general appearance, this nearly approaches the original species. It is a low growing shrub, with very spinous flexuose branches almost denuded of leaves, the stems being round, smooth, and pallid: the spines generally longer than the internodes are evidently young abortive branchlets, for they often bear leaves, and most frequently flowers, sometimes lengthening and becoming flexuose and prickly: they grow out above the petiolar insertion of each leaf, and there appears on either side of every spine, a young branch, bearing copious alternate leaves: these mostly soon die away, leaving cicatrices on both sides. The leaves are alternate, oblong, almost orbicular at the apex, where there is a slight mucro, they are cuneate at base, terminating in a slender petiole, entire on the margin, and of a pallid glaucous green on both sides. The calyx is tubular, campanulate, somewhat 5-angled at base, the border is divided into 5 short, obtusely angular, erect, very fleshy from the base of each cell. The style is erect, simple, somewhat shorter than the stamens. The stigma is clavate, green, with 2 compressed rugose lips. The fruit is a berry with very little pulp, inclosing 2 hard obovate nuts, flat within, rounded outside, each having at the base 2 distinct apertures, which on the inner side extend some way upwards, outside they are separated by a short spine; in this aperture may be seen the strophiole of the seed, by which it receives its nourishment from the fleshy support of the nut: the testa is of a dark green hue, oblong, compressed, smooth, tapering below, exhibiting on the inner flattened side, the before-mentioned protuberant prolongation of the testa: the endopleura is a very thin membrane covering a hard fleshy albumen which encloses the embryo: this is amphitropous and filiform; the radicle which points to the base is terete, a little swollen below; the cotyledons are incumbent, sharply curved at their origin, becoming somewhat straight towards the extremity which closely approaches the end of the radicle.

4. Grabowskya *Lindleyi*: *G. Boerhaavifolia*, Lindl. *Bot. Reg. tab.* 1985:—parce spinosa, frondosa: foliis ovatis, apice acutis, basi in petiolum longum cuneatis: floribus paucis, corolla alba, fauci viridi-venosa, limbo subviolacea.—Rio Grande, Braziliæ meridionalis. (Sellow).

This appears to be a more bushy, and far less spiny species than any of the others, the foliage seems dense, the leaves more elliptic, and the purplish flowers few in each axil, while in the Peruvian species, with which it has been confounded, the flowers are white, and crowded in almost terminal corymbs.

Dr. Walpers (Repert. Bot. Syst. 3. 113) adds 2 other species, but there appears no reason for placing the first (*G. disticha.* Meyen.) in this genus, since the fruit is unknown, and its characters agree quite as well with *Lycium*. The other (*G. Meyeniana* Nees. *Atropa spinosa*, Meyen.) is the plant I have described under the name of *Lycioplesium Meyenianum* (*ante p.* 332.) I am not acquainted with the

Triguiera of Cav. which may probably belong to this tribe.

The evidence given above, in regard to the carpological character of *Grabowskya*, taken into consideration with what I have advanced on a former occasion respecting *Nolanaceæ* (p. 367), renders it clear that this genus cannot appertain either to *Borragineæ*, or to *Nolaneæ*, although it is to this order that it bears the greatest affinity, its position being manifestly between them; with the tribe *Borrageæ* it agrees in the gynobasic origin of its ovaria, and in having a fruit with 2 bilocular nuts, and in the adhesion of the style to the axis of the adnate ovaria, but the form and position of the embryo in copious albumen, independent of its glabrous and totally different habit, forbids any positive connexion with it. On the other hand, the difference between it and *Nolaneæ* is not great: it agrees with them in the form and position of the embryo enveloped in albumen, in its 2-locular nuts, which that tribe often possesses, but it differs in the small and regular number of its ovaria, which in *Nolaneæ* are constantly more numerous, always distinct, and never confluent with the style as in *Grabowskya*; the æstivation of the corolla is also deeply plicate in the one, and imbricate in the other; it agrees, however, as before shown, both plurima, stylo unico centrali, distincta. Nuces plurimæ, 1-6 loculares, loculis 1-spermis, imo perforatis. Semen basi strophiolo vario instructum. Embryo albumine amplo filiformis, spiralis.

Thus it is seen that *Grabowskyeæ* stand in relation to *Nolaneæ*, in the same position that *Dichondreæ* do to *Convolvuleæ*, and although the former, in respect to *Solaneæ*, are placed at the two extreme points of the class *Tubulifloræ* Endl., it cannot be denied that these Orders offer many analogies common to each other, for *Grabowskya* has quite the habit and inflorescence of *Lycium*, and *Nolana* is not very dissimilar in habit from *Physalis*, and other Solanaceous plants; still the carpological characters of the *Nolanaceæ* seems so very distinct, verging evidently towards *Ehretiaceæ*, that there appears to me ample reason for justifying the arrangement above proposed, which also offers the advantage of conciliating the very opposite views of our most distinguished Botanists in regard to these plants.

(*To be continued.*)

Note sur la Fleur des NARCISSUS, *par* LOUIS CAGNAT.

Sans rechercher à quel verticille elle appartient, les Botanistes ont appelé *couronne*, l'espèce de coupe que présentent les fleurs des *Narcissus*. Cependant il n'est pas seulement nécessaire d'indiquer la forme d'un organe, il faut encore s'attacher à reconnaître quelle est sa nature et à quel ordre de pièces il doit être rapporté. C'est ce qu'a fait M. Auguste de St. Hilaire pour la partie dont il s'agit; encouragé et aidé par lui-même, je vais hasarder quelques observations sur l'opinion qu'il a émise.

Avant de nous occuper de la couronne des *Narcissus*, je crois qu'il est bon de dire quelque mots sur les verticilles floraux de ces plantes et de celles qui sont analogues. L'auteur de la *Morphologie végétale* pense avec raison que, comme chez les vraies Liliacées, les Asparagées, etc. l'enveloppe

florale des *Narcissus* est formée par deux verticilles de trois pièces chacun, que les six étamines sont le résultat du dédoublement des six pétales, et que par conséquent il n'y a pas dans ces plantes de verticille staminal véritable.

Quand à la couronne des *Narcissus*, le même savant croit qu'elle est, comme la première enveloppe florale, composée de deux verticilles très-rapprochés et soudés intimement, comprenant chacun trois parties; et qu'elle résulte d'une multiplication. "En effet," dit-il, à peu-près, "la *multiplication naturelle* entraîne nécessairement l'alternance; or, puisque, dans ceux des Narcisses dont la couronne est à six lobes, nous voyons ceux-ci alternes avec les six pétales, il est probable qu'elle provient d'une multiplication." Il est très-vrai que la *multiplication naturelle* amène constamment l'alternance, comme le prouve le *Magnolia Yulan*; mais je ferai observer que, dans une fleur où il aurait quatre verticilles, dont deux résulteraient d'une *multiplication naturelle*, les parties du troisième verticille seraient opposées à celles du premier, et les pièces du quatrième au second verticille; en conséquence, si la couronne des *Narcissus* était, comme le pense M. Aug. de St. Hilaire, composée de deux verticilles provenant d'une *multiplication naturelle*, nous aurions, non pas l'alternance des lobes de la couronne avec les parties de

On doit sentir que, si la couronne était composée de deux verticilles ainsi placés, rapprochés dans un même cercle et soudés ensemble, on ne s'appercevrait plus que de l'opposition, puisque les pièces du quatrième verticille rempliraient les espaces compris entre celles du troisième. Mais nous avons en réalité comme je l'ai dit une parfaite alternance; donc, je le répète, la couronne des Narcissus n'est point le résultat d'une multiplication.

Dans les fleurs doubles, nous trouvons la première enveloppe florale, adhérente à une couronne facile à reconnaître à sa forme et à sa couleur; puis nous voyons plusieurs verticilles dont les pièces soudées seulement par leur bords, présentent intérieurement aussi chacun sa couronne, plus ou moins bien formée, plus ou moins distincte; et ainsi nous avons une alternative d'enveloppes et de couronnes superposées, d'où il est impossible de ne pas conclure que de chaque enveloppe dépend une couronne. Enfin au centre de la fleur nous remarquons avec plus ou moins de clarté, des pétales isolés et des étamines semi-metamorphosées qui ont à leur face une petite languette; ce qui achève de démontrer l'intime rélation des enveloppes florales avec la couronne; et par conséquent celle-ci ne résulte point d'une multiplication, mais d'un dédoublement.

Ce que a dû nécessairement me confirmer dans cette opinion, c'est que j'ai trouvé une fleur simple de *Narcissus* dans laquelle il n'y avait de complet que le verticille intérieur formé de trois pièces ayant une couronne à trois lobes; tandis que du verticille extérieur, il n'était resté qu'un pétale complètement isolé, parfaitement libre depuis l'ovaire, et qui présentait au sommet de son onglet, une languette ayant la même consistance, la même couleur que la couronne du verticille intérieur et parfaitement analogue à celle des pétales isolées que l'on voit dans les fleurs doubles. Il est impossible, ce me semble, de ne pas sentir l'intime rélation de cette languette avec le pétale qui la supporte, et par conséquent la couronne, comme je l'ai dit, ne peut que provenir d'un dédoublement petaloide[*] analogue à celui qui a lieu dans les pétales des *Nerium* et des *Silene*.

Mais, peut on objecter, quand ils existent, les lobes de la couronne des *Narcissus* ne sont point opposés mais alternes avec les divisions de l'enveloppe florale. Cela doit tenir à ce que chaque dédoublement pétaloïde, aura été originairement divisé en deux lobes commes les pétales du *Primula officinalis*, et que chaque lobe se sera intimement soudé avec un des deux lobes du dédoublement le plus voisin, comme si dans *Draba verna*, par exemple, où les pétales sont partagés en deux divisions, chacune s'unissait intimement avec la division contigue du pétale le plus rapproché.

Il y a plus; l'enveloppe florale des *Narcissus* étant formée par deux verticilles soudés l'un avec l'autre, les lobes que présente la couronne doivent appartenir par moitié aux deux verticilles; une moitié d'un lobe doit appartenir au dédoublement pétaloïde du verticille extérieur, et l'autre moitié au dédoublement du verticille intérieur. C'est ainsi que l'androphore en apparence simple des *Oxalis* appartient a deux verticilles; ou si l'on veut, c'est ainsi que les pièces du calice quinquncial des Œillets véritablement en spirale, sont cependant soudées à leur base en seul tube.

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[*] L'idée de la théorie du dédoublement conçue par M. Dunal, a été

Description d'un nouveau genre de la famille des DIOSMÉES, *par* J. E. PLANCHON, *docteur-ès-sciences.*

(TAB. XVII. XVIII.)

RABELAISIA.

CHAR. GEN. Flores dioïci. MASC. *Calyx* tripartitus, laciniis ovatis. *Petala* 3, calyce duplo longiora, ejusdem laciniis alterna, æstivatione erecto-conniventia, marginibus basi invicem-incumbentibus, apice valvatis cum acuminulo inflexo, sub anthesi extus revolutis. *Stamina* 3, petalis alterna, filamentis brevibus sub corpusculo globuliformi insertis, antheris globosis, loculis longitudinaliter hiantibus. FŒM. *Calyx, corolla* maris, sed sub fructu observati; stamina 3, effœta? *Ovarium....* *Capsula* tricocca, coccis circa columellam inferne coalitis, lateribus compressis, introrsum et apice truncato dehiscentibus? *Semen* unicum, sub apice loculi suspensum in specimine immaturum.

Frutices (?) *Archipelagi Malayani*, ramulis *trigonis, innovationibus, inflorescentia, foliorumque petiolis furfuraceo-lepidotis.* Folia *alterna, exstipulata, membranacea, crebre pellucido-punctata, obovato-oblonga, margine subundulata, basi cuneata, cum petioli longi apice incrassato subgeniculatim articulata.* Flores *minuti, masculi in capitula parva secus rachin simplicem in racemulos breves congesta glomerati, fœminæi pauciores secus rachin breviorem in spicula densa brevissima conferti.*

Sapor foliorum amaricans et calidus. Glandulæ foliorum subepidermide prominentes, aliis majoribus cum minutissimis crebrioribus intermixtis.

1. Rabelaisia *Philippinensis*; foliis 8-10 pollicaribus basi acutis, petiolo apice conspicue incrassato.

In Insulis Philippin. legit *Cuming.* (*Cuming, exsicc. in herb. Hook. n.* 1501, 1512 (specim. masc.) et *n.* 501 (specim. fœmin.)

2. Rabelaisia *parvifolia*; foliis 2-3-pollicaribus basi atte-

nuata subrotundatis, petiolis gracilibus apice vix sensim incrassatis.

Hab. ad Fretum Bouton. (Vidi specim. fœmineum, imperfectum, sed absque dubio præcedenti congener, a cl. *Webb* communicatum).

En consacrant un genre à la mémoire du celèbre auteur de Pantagruel, j'ai à peine besoin de rappeler un passage de son livre où l'idée burlesque du mot Pantagruelion amène un remarquable digression sur l'origine des noms des plantes. J'avais songé à rendre à l'ami de Rondelet, cet hommage un peu tardif, lorsque Mr. Brown m'à fait remarquer dans la *Théorie Elémentaire* de De Candolle la citation du morceau dont j'ai parlé, et l'intention qu'avait l'illustre professeur de Genève, de dédier un genre a son auteur.

Ce genre appartient évidemment à la famille des Diosmées, renfermant les Diosmées propres et les Zanthoxylées de plusieurs auteurs. Il paraît être voisin de l'*Evodia*, genre qui a des fleurs polygames et non hermaphrodites, et sur lequel j'aurai occasion de revenir dans une revue des groupes qui formaient les Rutacées de L. de Jussieu. Je renvoie à ce travail dont les matériaux sont déjà prêts, la discussion des affinités du *Rabelaisia* et d'autres genres. Je ferai pourtant observer la ressemblance frappante d'aspect, qu'il présente avec le *Soulamea* (Cardiophora ! Benth.), genre qu'on a

fructifère. 5. un fruit. 6. coupe verticale d'un des carpelles. Ces trois dernières figures sont de grandeur naturelle.

ALGÆ NOVÆ ZELANDIÆ; *being a Catalogue of all the species of* ALGÆ *yet recorded as inhabiting the shores of* NEW ZEALAND, *with characters and brief descriptions of the new species discovered during the Voyage of H. M. discovery ships* "EREBUS" *and* "TERROR," *and of others communicated to Sir W. Hooker by* DR. SINCLAIR, *the* REV. W. COLENSO, *and* M. RAOUL. *By* DR. HOOKER, *and* W. H. HARVEY, ESQ.

(In Mr. Allan Cunningham's "Specimen of the Botany of New Zealand," published in the "Companion to Curtis's Bot. Magazine," a list of forty-seven *Algæ* is given, comprising all that was known up to the year 1836 of the Marine Botany of the Islands of New Zealand. M. Montagne has recently described twelve additional species in the Botany of the French Polar Voyage, and we have now to add sixty-five others, making the whole number recorded one hundred and twenty-four, which can scarcely be more than one fourth, at the very most, of the *Algæ* which probably inhabit the extensive coasts of New Zealand. The new species now described were chiefly collected by the officers of the Antarctic expedition. To these we have added a few, communicated to Sir W. J. Hooker by Dr. Sinclair and the Rev. W. Colenso, and an interesting fasciculus of *Algæ* collected by M. Raoul, and liberally placed in our hands for publication by the Directors of the Paris Museum. We regret that we have not been able to procure a set of Mr. Stephenson's *Algæ*, an examination of which would in all probability have added somewhat to our number. In the following list we have marked with an asterisk (*) those of which we have as yet seen no New Zealand specimen, and with a cross (†) those that are altogether unknown to us.)

Fucoideæ.

1. *Sargassum *vulgare.* Ag. *Fucus natans,* Turn. *t.* 46.

Hab. New Zealand, *Sir Joseph Banks, Lesson.*

2. Sargassum *bacciferum,* Ag. *S. Atlanticum,* Bory. *Fucus bacciferus,* Turn. *t.* 47.

Hab. New Zealand, *D'Urville, Lesson, Sinclair.*

3. †Sargassum *granuliferum,* Ag. *Ic. Alg. t.* 11.

Hab. Cook's Straits. *D'Urville.*

4. †Sargassum *droserifolium,* Bory, *in Duperr. Voy. p.* 129.

Hab. New Zealand, *Lesson.*

5. Sargassum *Sinclairii,* nobis; caule basi semiterete apicem versus compresso obtusangulo filiformi, foliis lanceolatis basi attenuatis tenuibus nervo evanescente, inferioribus majoribus inciso-dentatis, superioribus remote dentatis subintegerrimisve, vesiculis paucis breve petiolatis foliiferis, receptaculis brevissimis axillaribus foliolo minuto subtensis parum divisis lobis lævibus turbinatis apice abrupte 3-4 cornutis.

Hab. Bay of Islands, *Sinclair, Lyall,* &c.

Nearly related to *S. incisæfolium,* from which it differs in the semiterete obtusely angled stem, and in the shape of the receptacles; and to *S. lacerifolium,* from which it is also disterised by the muricated stem, a peculiarity which it shares with *S. linifolium* and *S. onustum*, from both which it is, in other respects, very different.

7. *Sargassum *longifolium*, Ag. *Fucus longifolius*, Turn. *t.* 104.

Hab. New Zealand, *Sir Joseph Banks*, *D'Urville.*

8. †Sargassum *duplicatum*, Bory, *in Duperr. p.* 127.

Hab. New Zealand, *Lesson.*

Is not this a synonym of *S. cristæfolium*, Ag.? a plant of which we have excellent specimens from the Mauritius.

9. Sargassum *plumosum*, A. Rich. *Sert. Astrolab. p.* 136. *S. capillifolium*, A. Rich. *Fl. Nov. Zel. t.* 5. and *S. pennigerum*, A. Rich. l. c. t. 6.

Hab. Howa Howa Bay, *D'Urville.* Bay of Islands, abundant, *Sinclair*, *Lyall*, *Hooker*, *&c.*

Of M. Richard's variety *capillifolium*, which he at first published as a distinct species, we have received but few and very imperfect specimens; of his var. *pennigerum*, on the contrary, our series is extensive, and were it not for the high authority of the French Naturalist, and the seemingly convincing data on which he founds his observation, we should certainly never have supposed these two varieties to belong to one species. Our very numerous specimens of the variety *pennigerum* present no intermediate types of form with the var. *capillifolium*, and only differ one from another in being more or less branched. Some, like those described by M. Richard, have long simple stems, set with deeply pinnatifid leaves; others, in an older state, are bipinnate, their pinnæ issuing from the axils of the primary leaves, and furnished like the stem or main rachis with leaves neither more nor less compound than those of the first set. From the axils of these secondary leaves spring fruit-bearing ramuli, or, in old specimens, a third series of pinnæ similar to the second, and so the plant continues to branch after a perfectly uniform law.

10. Sargassum *Raoulii*, nobis; caule longissimo gracili lævi compresso angulatim-flexuoso alterne ramosissimo, ramis similibus, foliis distichis distantibus pluries dicho-

tomis laciniis angustissimis plano-compressis enerviis, vesiculis sphæricis muticis ad basin folii solitariis petiolatis, petiolo filiformi compresso, receptaculis lævibus cylindraceis racemosis, pedicellis sæpe furcatis.

Hab. Akaroa, *M. Raoul.* (Also a native of Tasmania.)

Stem 2 feet or more in length, half a line in width and preserving nearly an equal breadth throughout our specimens, quite smooth, compressed, angularly bent at intervals of about an inch; the branches issuing from the angles, quite distichous, zigzag like the stem and emitting from their angles a second series of branches, or filiform dichotomously divided leaves or ramuli. *Leaves* resembling the branches, but smaller, multifid, the segments very slender, flat, without midrib. *Vesicles* generally solitary, either at the base of a leaf, or in the interval between two leaves, globose, 2-4 lines in diameter, muticous, on rather long, compressed petioles. This species is allied to *S. piluliferum* and *S. Desfontainesii,* from the first of which its nerveless leaves distinguish it, and the nature of the stem from the latter. M. Raoul's specimens are the only individuals from New Zealand which we have seen, and they are not in fruit, but we have the same plant from two stations in Tasmania, and have added the character of the fruit from one of these. On one of the

Hab. Kaua Kaua Bay, *Lesson.*

14. †Marginaria *Boryana*, Montag.—*Sargassum Boryanum*, A. Rich. *Sert. Astrolab. p.* 138. (not *S. Boryi*, Ag.)

Hab. Shores of New Zealand, *D'Urville.*

15. *Turbinaria *denudata*, Bory. *Fucus turbinatus*, Turn. *t.* 24. *f.* a-e.

Hab. Shores of New Zealand, *Sir Joseph Banks*, *Lesson.*

16. Phyllospora *comosa*, Ag. *in Nov. Act. N. C. XIX.* 1. 311. *t.* 28. *f.* 11. *Fucus comosus*, Turn. *t.* 142. *Macrocystis comosa*, Ag.

Hab. Hew Zealand, *D'Urville*, *Hooker.*

17. Phyllospora *quercifolia*, Harv.—*Fucus quercifolius*, Turn. *t.* 151. *Cystoseira? quercifolia*, Ag. *Stephanocystis quercifolia*, Treviran. *in Endl. Suppl. III. p.* 31. *Platythalia quercifolia*, Sonder, *in Bot. Zeit.* 1845. *p.* 51.

Hab. Bay of Islands, *D'Urville*, *Colenso.*

The fructification of this remarkable species was unknown to Turner, who nevertheless was struck with its near affinity to *F. comosus*, the type of Agardh's genus *Phyllospora.* The frond is probably of great length. Our specimens are all imperfect, consisting of branches and broken pieces of the stem, from which the habit may be inferred to be similar to that of *F. comosus*, namely, a long simple stem furnished with lateral, undivided, alternate branches, which bear a second and perhaps a third series of similar shorter ones; the last series of branches and the apices of the first, equally producing receptacles. These receptacles are evidently transformed leaves. They occupy the position of the normal leaves, but are much smaller, the leaves being 4-5 inches, the receptacles 1-1½ in length. The latter are cuneate and entire below, sharply serrated above, their upper half densely papillated on both surfaces with the globose conceptacles, which in our specimens contain large, dark olive, undivided spores, with a wide border. None of our specimens produce vesicles.

18. Carpophyllum *Phyllanthus*, nobis. *C. flexuosum*, Grev.

Fucus phyllanthus, Turn. *t.* 206. *Sargassum phyllanthum*, Ag. *Fucus flexuosus*, Esper.

HAB. Coast of New Zealand, *Sir Joseph Banks*, *D'Urville*, *Sinclair*, *Lyall*, *Hooker*, *&c.*

✓ 19. Carpophyllum *Maschalocarpus*, nobis. *C. Maschalocarpum*, Grev. *Sargassum Maschalocarpum*, Ag. *Fucus Maschalocarpus*, Turn. *t.* 205.

HAB. Coast of New Zealand, *Sir Joseph Banks*, *Sinclair*, *Lyall*, *Hooker*.

We can by no means agree with M. Richard in uniting this species with the preceding. To us they appear to be abundantly distinct at all ages, and we have formed this opinion from an extensive series of perfect and imperfect specimens of both kinds. Turner's figure of *F. Phyllanthus* is certainly drawn from a very much battered individual, but it is sufficiently like the plant in its perfect state to be recognised without much difficulty. We have seen many specimens similar to it, and possess others from more perfect individuals where the frond is young and vigorous; but all are alike characterised by having the denticulate margin fringed with the racemose receptacles along the whole course of the leaf-like branches, which resemble in a very striking manner the phyllodia of a *Phyllanthus* (Section *Xylophylla*) to which the axils of marginal leaves, not at the apex of lateral spines. It is true that, on battered specimens, the leaves are sometimes broken off while the receptacles remain, and such specimens may have been regarded by the illustrious French Naturalist as Turner's *F. Phyllanthus*, but it is clear to us that M. Richard could not have known the true *C. Phyllanthus*, or he never would have confounded *C. Maschalocarpus* with it.—We retain Turner's excellent name "*Phyllanthus*," although Esper's has slightly the priority of publication, because Esper's specimens were derived from Turner, to whom in courtesy the right of publication belonged; and because, but that they are quoted by Turner, Esper's figure and description would be wholly unintelligible. It is manifest from the observations of Turner, under both species, that he designed the specific names to be retained as substantives, not adjectives, as altered by Agardh, and we have therefore restored the masculine termination.

20. *Blossevillea *retroflexa*, Kütz. *Fucus retroflexus*, Turn. *t.* 155.

HAB. Kouraki Bay, *D'Urville*. Akaroa, *Hombron*.

21. Blossevillea *retorta*, Montag. *Fucus retortus*, Mart. *Cystoseira retorta*, Ag.

HAB. Akaroa, *Hombron*, *Raoul*.

22. *Blossevillea *torulosa*, Dne. *Fucus torulosus*, Turn. *t.* 157. *Cystoseira*, Ag.

HAB. New Zealand, *D'Urville*.

23. Blossevillea *paniculata*, Dne. *Fucus paniculatus*, Turn. *t.* 76.

HAB. New Zealand, *Sinclair*.

Possibly a new species; but our specimens are not in a good state, nor with advanced fruit. The ultimate ramuli are longer than Turner's description and figure represent, and perfectly simple.

24. *Scaberia *Agardhii*, Grev. Syn. (1830). *Castraltia salicornoides*, A. Rich. *Sert. Astrol.* (1834.)

HAB. New Zealand, *Lesson*.

This remarkable plant is very extensively distributed along the southern shores of New Holland, and in Tasmania, in which latter island it abounds; but we have not yet seen specimens from New Zealand.

25. Hormosira *Billardieri*, Montag. *Moniliformia Billardieri*, Bory. *Fucus moniliformis*, Labill. *t.* 262.

HAB. Wangari Bay, *D'Urville*. Bay of Islands, *Lyall*, *&c.*

26. †Hormosira *Sieberi*, Dne. *Moniliformia Sieberi*, Bory.

HAB. New Zealand, *Lesson*.

27. Splachnidium *rugosum*, Grev. *Fucus rugosus*, Turn. *t.* 185.

HAB. New Zealand, *Lesson*. Akaroa, *Raoul*.

28. Xiphophora *Billardieri*, Montag. *Fucus gladiatus*, Labill. *t.* 256. Turn. *t.* 240.

HAB. Bay of Islands, *Sinclair*, *Lyall*, *Hooker*, *Raoul*.

22. Durvillæa *utilis*, Bory, *in Duperr. Voy. t.* 1. 2.

HAB. Shores of New Zealand, *D'Urville*, *&c.*

LAMINARIEÆ.

30. †Laminaria *pygmæa*, A. Rich. *Sert. Astrolab. p.* 139.

HAB. New Zealand, *Lesson*.

This, to judge by the description, hardly belongs to the present genus.

31. Capea *biruncinata*, Montag. *Flor. Canar. t.* 7. *Laminaria biruncinata*, Bory. *L. Cunninghamii*, Grev. *MS.*

sitisve, ramis erectis, apicibus sæpissime tridentatis, receptaculis conicis.

Hab. Bay of Islands, *R. Cunningham*, *Sinclair*, *Lyall*, *Hooker*.

Root conical, densely clothed with stupose fibres. *Frond* 8-10 inches long, from ⅛ to ¼, or sometimes nearly ⅓ an inch in width, distichously branched from the base, the lower branches generally opposite as are also several of the upper ones, the latter more or less unilaterally dichotomous and thus alternate, all issuing at a small angle, membranaceous, translucent and thin, in age becoming more opake and subcoriaceous, destitute of evident pores, every where furnished with a percurrent nerve, which is medial through the branches, but as it approaches the axillæ deviates towards the upper margin of the lamina. *Apices* of the branches entire, or very generally three-toothed. *Colour* when young a fine olive, becoming foxy brown in age. *Substance*, tough, but soft, very like that of *Dictyota dichotoma*. *Receptacles* at the apex of the nerve of the frond, generally terminating the middle tooth of the three, but sometimes produced by all the teeth, conical, rather acute, fleshy, not quite a line in length, composed of branching filaments radiating round a columnar axis, and bearing *spores* and *antheridia* on the same filament; the *antheridia* oblately elliptical, terminating the threads, containing coloured matter, and having the three joints immediately below them slightly swollen and coloured; the *spores* linear-oblong, seated on short side branches at the lower part of the filaments, filled with dense olivaceous endochrome.—In habit this plant very strongly resembles *Halyseris polypodioides*, but its structure is dissimilar, and the fruit altogether different. In the fruit it entirely agrees with *Sporochnus Cabreræ*, Ag., a plant which Kützing has, with great propriety, made the type of his genus *Carpomitra*.

DICTYOTEÆ.

36. Zonaria *flava*, Ag. *Z. Tournefortii*, Mont.

Hab. Bay of Islands, *Lyall*. *Hooker*.

Our specimens are abundantly covered with the large cushion-like blotches of fructification, which are very irregular in form and size. They do not appear to differ in any essential respect from Canary Island specimens also before us.

37. Zonaria *Sinclairii*, nobis; cæspitosa, caule gracili filiformi flexuoso villoso ramoso, ramis setaceis elongatis in frondes pusillas anguste cuneatas fissas basi longe attenuatas abeuntibus.

HAB. New Zealand, *Dr. Sinclair.*

Root a widely spreading mass of stupose fibres, from which rise numerous slender filiform stems 4-5 inches long and scarcely thicker than hog's bristle, flexuous, branched, and every where clothed with short woolly hairs. The branches terminate in very narrow wedge-shaped cloven fronds. *Colour* a greenish-olive.

38. Dictyota *dichotoma*, Lam.

HAB. New Zealand, plentiful. *Lyall, &c.*

39. Dictyota *Kunthii*, Grev. *Zonaria Kunthii*, Ag. *Ic. t.* 16.

HAB. New Zealand, *Sinclair.*

ECTOCARPEÆ.

40. Sphacelaria *hordeacea*, Harv. *in Hook. Ic. Pl. t.* 614.

long. *Ramuli* densely pinnated with long, simple or forked, fastigiate, erect pinnulæ resembling those of *S. scoparia.*

42. Sphacelaria *funicularis*, Montag. *Voy. au Pole Sud. t.* 14. *f.* 1. *Hook. fil. et Harv. in Fl. Antarct. p.* 180.

HAB. Akaroa, *Hombron.* East Coast, *Colenso* (218.)

43. Ectocarpus *siliculosus*, Lyngb.

HAB. Bay of Islands, *Hooker.*

CHORDARIEÆ.

SCYTOTHAMNUS, Nov. Gen.

Frons fruticosa, compressa v. cylindracea, vage ramosissima, cartilagineo-coriacea, e filis crassis longitudinalibus maxime intricatis flexuosis difformibus coloratis juxta peripheriam in fila radiantia horizontalia moniliformia dichotoma abeuntibus formata. *Utriculi* oblongi, inter fila periphericalia nidulantes, apicales.

44. Scytothamnus *australis*, nobis. *Chordaria australis*, Ag! *in Linnæa XV. p.* 47.

HAB. On rocks in the Bay of Islands, very abundant.

Root an expanded disk. *Fronds* tufted, 4-10 inches long, excessively branched and bushy, with the habit and substance of a *Cystoseira*, but a totally different structure, solid or hollow according to age; the lower part of the stem often almost woody, compressed or terete, coriaceous, opake. Under a lens the structure is very beautiful; the axis consists of longitudinal long-jointed anastomosing filaments coloured with a brown endochrome, closely packed together and somewhat parallel; the periphery of dichotomous moniliform horizontal filaments radiating from the outer ones of the axis, their joints containing a dark brown mass, and about equal in length and breadth. There is no prolongation of the filament beyond the surface of the frond, as in *Mesogloia* and *Chordaria*, but the threads of the periphery end abruptly in the epidermis, and are as closely glued together as those of a *Gigartina.*—A very curious plant, which we have ascertained by an interchange of specimens to be the *Chordaria australis* of J. Agardh, who is now inclined, with us, to regard it as the type of a new genus, allied to *Chordaria* and *Mesogloia*. Our friend, M. Montagne, on the contrary, considers it one of the *Floridæ*, allied to *Grateloupia*, an opinion from which, for many reasons, we are compelled to dissent.

RHODOMELEÆ.

EPINEURON, Harv. in Herb.*

Frons plana, membranacea vel cornea, linearis, costata, distiche ramosa vel e disco prolifera, vage reticulata. *Cellulæ* interiores magnæ, polyhedræ, transversim ordinatæ; exteriores pluriseriatæ, pusillæ, coloratæ, irregulares. *Stichidia* semper e nervo enata, lanceolata, involuta, duplici serie sphærosporas foventia. *Ceramidia*. . . . — Algæ *frondosæ v. foliosæ fusco-rubræ, sæpe ad marginem dentatæ ciliatæve.*

45. †Epineuron *lineatum*, nobis. *Fucus lineatus*, Turn. *t.* 201. (non *Amansia multifida*, Lam.)

HAB. New Zealand, *Sir Joseph Banks.*

An attentive perusal of Turner's characters of his *Fucus lineatus* has convinced us that it must be something very stichidiis nervum creberrime vestientibus filiformibus incurvo-hamatis simplicibus.

HAB. East Coast, *Mr. Colenso*. Bay of Islands, *Lyall.*

Our specimens, apparently broken, are 5-6 inches in length, and not a line in breadth. The main stem, from loss of membrane and thickening of midrib, is narrower than the branches. It is irregularly divided at a few long intervals into principal branches, which are bare of ramuli in their lower part, but closely pinnated and sometimes bipinnated above, the pinnæ very erect. Every part of the frond is regularly inciso-serrate, the serratures being from ½ a line to nearly a line in length, and about as much asunder, alternate, subulate, acute. The midrib, which is evident below, becomes very faint upwards, and is gradually lost in the younger portions of the frond. The colour of our specimens is a dark reddish brown, fading to white on maceration. The substance is rigid, thickish, and it does not adhere to paper. Under a lens of lower power, the frond appears closely striate transversely, owing to the arrangement of the cellules in the interior of the frond; under a higher power this character is lost, as the cells of the periphery, which are small and more opake, obstruct the view. The stichidia are produced in great abundance along the midrib, which eventually they completely cover. Our plant is much less branched than Turner's *F. lineatus*, with longer and straighter branches, a more rigid and thicker substance, and a different colour.

47. *Rhodomela *pinastroides*, Ag. *Fucus pinastroides*, Turn. *t.* 11.

HAB. New Zealand, *Sir Joseph Banks.*

No one has gathered this species at New Zealand since the time of Banks, whose specimen is vouched for by Turner. We earnestly hope some of our friends at New Zealand may re-discover it.

48. Rhodomela *Mallardiæ*,* Harv.; siccitate nigra, caule

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* My first acquaintance with this plant was from beautiful specimens

elongato cartilagineo filiformi crassiusculo inarticulato pinnatim bipinnatimve ramoso, ramis simplicibus densissime ramulis velatis, ramulis brevissimis obsolete articulatis striatis dichotome multifidis quadrifariis patentibus.

HAB. East Coast, *Colenso.*

Frond 6-8 inches long, as thick as pack-thread, branched with greater or less regularity in an alternate pinnate manner, the branches often again producing a set similar to themselves. The lower part of the stem and the bases of the larger branches are naked and smooth, while all their upper portions and the branches are densely covered with short ramuli, which give the plant the habit of *Cladostephus spongiosus.* *Ramuli* a line long, rigid, horizontally patent, irregularly dichotomous with patent axils, fastigiate, the apices acute, imperfectly jointed, the dissepiments opake. *Joints* as long as broad, with few striæ. *Colour* when dry intense black. *Ceramidia* (on Mrs. Mallard's specimens) ovate-urceolate, with a slender protruding mouth, sessile on the ramuli, which are then thicker and less divided than usual. *Tetraspores* immersed in the scarcely distorted uppermost divisions of the ramuli, in a single row.—The habit of this species is very similar to that of *R. Larix* and *R. floccosa.* There is also a resemblance to *Polysiphonia glomerata,* but

Hab. East Coast, *Colenso.* Bay of Islands, *Hooker.*

Fronds ½ inch to 1 inch in height, setaceous, densely matted together in broad tufts, much and irregularly branched, rigid, brownish-red, turning black in drying; branches very patent, simple or forked, as long as the height of the frond, and more or less furnished with patent spine-like ramuli, which issue at right angles and are frequently secund. *Tetraspores* scattered over the branches, immersed in the periphery. Structure : a large central tube surrounded by several concentric rows of endochromatic cells or tubes, which gradually become smaller outwards.—This species so closely approaches in appearance the West Indian *Gigartina spinella,* that it can scarcely be distinguished except by its darker colour, until a section of the stem reveals its different structure. It also strongly resembles *Gelid. corneum* var. *crinale,* but may be known at once by its acute ramuli. The structure is decidedly that of the family *Rhodomeleæ,* and not far different from that of *R. scorpioides,* but the fruit, so far as it has been observed, is of a very anomalous nature. It presents the only instance we know of among *Rhodomela* of scattered tetraspores.

50. Polyzonia *incisa,* J. Ag. *in Linnæa XV. p.* 24.

Hab. A common parasite on *Gelidium lucidum.*

51. Polyzonia *adiantiformis,* Dne. *in Nouv. Ann. Sc. Nat. XVII.* 363.

Hab. New Zealand, (*Decaisne.*)

52. Dasya *collabens,* nobis; caule fruticoso tereti inarticulato flaccido glabro alterne ramoso, ramis subdistichis erecto-patentibus simplicibus vel iterum alterne divisis fila articulata rosea monosiphonia dichotoma lateralia emittentibus, filis crassis sensim attenuatis acutissimis bis-terve furcatis, articulis diametro duplo vix triplo longioribus ad genicula subcontractis.

Hab. Akaroa, *M. Raoul.*

2—4 inches high. Nearly allied to *D. Arbuscula,* from which it differs in being of a much more flaccid, gelatinous nature, closely adhering to paper; and also more essentially in the dichotomous filaments not being equal in diameter throughout, but their divisions gradually tapering to a fine point. The stem has 5 radiating tubes.

53. Polysiphonia *dendritica*, Ag.; prona, ad algas majores applicita pusilla disticha bipinnata, caule compresso pinnis creberrimis elongatis cum ramulis subulatis alternantibus obsesso, pinnis iterum pinnatis, pinnulis subulatis approximatis alterne majoribus ramulosis et minoribus simplicibus, articulis brevissimis pluri-striatis, ceramidiis sæpe obliquis pinnulas terminantibus globoso-urceolatis ostiolo prominulo.

HAB. Parasitical on *Gelidium lucidum*.

Frond ½ inch to 1 inch in length, lying flat on the surface of the *Gelidium*, and sometimes attached to it by the whole length of its main stem, all the branches being free. Agardh describes his plant (a native of Brazil) as being "*inordinate* ramosa, pinnis simplicibus compositisque intermixtis." We consider this apparent, not real, irregularity of the branching to have arisen from the frond at first being margined with subulate teeth which never change their form or size, but from whose axils spring secondary branches fringed like the primary with subulate ramuli, and that again, in the axils of these ramuli, tertiary branches are formed and so on. In of the frond, very short, composed of beautifully hexagonal oblong cells, about 6 in the breadth of the joint, and internally formed of about twelve large tubes, each containing a separable sac of endochrome, surrounding a small central empty tube. Colour when dry very black, and substance rigid.

55. Polysiphonia *rytiphlæoides*, nobis; nigro-fusca, caule crasso fruticoso virgato tereti sulcato brevissime articulato e basi ramosissimo, ramis virgatis erectis decompositis, ramulis lateralibus quadrifariis erecto-patentibus sensim attenuatis ultimis subulatis sparsis apice fibrillosis, articulis ramorum 7-siphoniis diametro quadruplo brevioribus.

HAB. New Zealand, *Raoul.*

Frond 4-6 inches high, coarse, dark brown, bushy. Joints of the stem and branches pellucid, but exceedingly short, so that the frond may be said to be closely transversely striate, rather than jointed. This species is nearly allied to P. *cancellata* of Tasmania, but has a different habit and shorter joints.

56. *Polysiphonia *botryocarpa*, nobis, in Fl. Antarct. t. 70. *Rhodomela Gaimardi ?* Mont. (not of Agardh.)

HAB. Akaroa, *Hombron.*

57. Polysiphonia *nigrescens*, Ag.

HAB. New Zealand, *Raoul.*

M. Raoul's specimens are small, but they have all the essential characters of this variable species.

58. Polysiphonia *Cladostephus*,* Mont ! *Voy. Pole Sud.*

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* Since this was prepared for press, Mr. Harvey has received from M. Montagne, to whom he communicated a specimen of his *P. byssoclados*, some fragments of the *P. Cladostephus* of that author, accompanied by the following note: "Admirez la ressemblance de deux choses que je crois pourtant différentes ! Le fait est qu'en lisant votre diagnose, je présumai sur le champ que votre *P. byssoclados* était identique à mon *P. Cladostephus*. Maintenant, que j'ai vu la plante, je reste dans le doute. Il est vrai que mes exemplaires sont ceux d'une algue agée. Toutefois en les comparant de point en point, on trouve des différences assez marquées dans la con-

p. 132. *t.* 14. *f.* 4.—*P. byssoclados*, Harv.! in Hook. *Journ.* 3. *p.* 436. *Griffithsia australis*, Ag! *Bindera Cladostephus*, Dne!

HAB. New Zealand, *Raoul.*

59. Polysiphonia *implexa*, nobis; parvula, cæspitosa, basi radicans, implexa, frondibus erectis brevibus vage ramosis, ramis subalternis patentibus apice ramulos paucos emittentibus, ramulis subulatis patentibus subsimplicibus, articulis 4-siphoniis diametro equalibus v. inferioribus sesquilongioribus.

HAB. New Zealand, *Raoul.*

Our specimens are about an inch in height, and seem to have formed wide intricate patches on rocks. The species is allied to *P. intricata*, J. Ag. and several of the same section, but cannot be included under any described species known to us.

60. Polysiphonia *strictissima*, nobis; cæspitosa, atro-rubescens, frondibus capillaribus membranaceis tenacibus strictis dichotomis, axillis angustissimis, ramis erectis! fere appressis, articulis 4-siphoniis inferioribus diametro 6-8-plo, superioribus 5-plo, ultimis 1½-3-plo longioribus, apicibus fibrillosis.

HAB. New Zealand, *Raoul.*

61. Polysiphonia *microcarpa*, nobis; *in* Hook. *Lond. Journ. IV. p.* 265.

Hab. Akaroa, *Raoul.*

62. Bostrychia *mixta*, nobis; *in* Hook. *Lond. Journ. IV. p.* 270.

Hab. Bay of Islands, *Hooker.*

CORALLINEÆ.

63. Jania *pistillaris*, Mont. *Voy. Pole Sud. p.* 147.

Hab. Bay of Islands, *Hombron, Colenso.*

64. †Jania *gracilis*, Mont. l. c.

Hab. Akaroa, *Hombron.*

LAURENCIEÆ.

65. Laurencia *pinnatifida*, Lamx. *Fucus pinn.* Turn. *t.* 20.

Hab. New Zealand.

66. Laurencia *obtusa*, var. *botryoclada*, J. Ag.—*Laurencia botryoides*, Bory.

Hab. New Zealand, *Lyall, &c.*

Sometimes this nearly resembles *L. papillosa*, Ag. Other specimens are scarcely different from the common form of *L. obtusa*, and some again approach the cylindrical variety of *L. pinnatifida.*

67. *Laurencia *Forsteri*, Grev. *Fucus Forsteri*, Turn. *t.* 77.

Hab. New Zealand, *Forster.*

68. *Laurencia *papillosa*, Grev. *Fucus thyrsoideus*, Turn. *t.* 19.

Hab. New Zealand, *Sir Joseph Banks.*

CLADHYMENIA, Harv. in Herb.

Frons membranacea, rosea, plana, tenuis, linearis, distiche pinnatifida, flaccida, e cellulis magnis polygonis granuliferis superficiem versus minutis composita. *Ceramidia* (in *Cl. Lyallii*) oblonga, ramuliformia e ramulo inflato vix contracto formata, fasciculum granularum foventia. *Sphærosporæ* (in *Cl. Gunnii*) minutæ, oblongæ per totam frondem sparsæ, inter cellulas superficiales nidulantes.—

Algæ Australasicæ substantia habituque ad *Halymeniam*, structura tamen ad *Laurenciam* affines. Apices ramulorum obtusissimæ.

In this group we propose to include, beside the two following species, the *Laurencia? membranacea* of Harv. in Hook. Journ. (*Cladhymenia Gunnii, Harv. MS.*), although as yet we are only acquainted with the tetraspores of that plant; and although there is a slight discrepancy in the structure of its frond, the stratum of minute surface cellules being nearly obsolete. Still, the habit is so completely similar to that of the following species that we think it may with safety be referred to our new genus. The *ceramidia*, if such they may be called, are certainly the lowest development of that organ with which we are acquainted, being no more than slightly inflated ramuli, scarcely shorter than the unmetamorphosed ones, containing at the bottom of the inflated portion a tuft of unequal angular seeds.

69. Cladhymenia *Lyallii*, nobis; radice fibrosa ramosa, fronde angusta nervo obsoletissimo percursa gelatinoso-membranacea bi-tripinnatifida, laciniis lineari-lanceolatis basi angustatis patentibus apicem versus brevioribus, supremis simplicibus, inferioribus elongatis pinnatifidis bipinnatifidisque, ramulis filiformibus obtusis, ceramidiis elliptico-

basi attenuatis subpetiolatis apice obtusissimis subtruncatis, ramulis altimis pusillis ciliæformibus linearibus obtusis brevibus alternis, ceramidiis oblongis pedicellatis.

Hab. Paroah Bay, *Lyall.* (A single specimen.)

Our specimen is 4 inches long, the stem ½ an inch broad in the middle, gradually tapering to the base, and very blunt at the apex. The plant probably attains to a much greater size. *Colour* a rosy pink.

71. Chylocladia *parvula*, Grev.

Hab. Akaroa, *D'Urville*, *Raoul.*

72. Chylocladia *Novæ Zelandiæ*, nobis; stipite brevi cylindraceo mox in frondem lato-linearem ampliato, caule (juniori tantum viso) simplici compresso articulato-constricto, ramis oppositis verticillatisve basi attenuatis, articulis diametro duplo brevioribus, tetrasporis per ramulos sparsis.

Hab. Bay of Islands, parasitical on the base of *Sphacelaria hordeacea*, *Lyall.*

Doubts, chiefly respecting its genus must rest on this species till we shall have received more perfect specimens. It has something the habit of *Champia*, and may possibly be more correctly placed in that genus. Our largest specimen is 3 inches long, and about a line in breadth, but it had only commenced throwing out its lateral branches, and we have yet to learn to what extent these are developed. The whole frond is divided by transverse diaphragms, at intervals of about half the diameter, and these are connected, as in *Champia*, by numerous rope-like threads. There is a slight contraction at the joints. The colour, probably iridescent when growing, is a dull greenish suffused with pink.

DELESSERIEÆ.

73. Delesseria? *Leprieurii*, Mont. *in Nouv. Ann. Sc. Nat. XIII.* 196. *t.* 5. *f.* 1.

HAB. Bay of Islands, near high water mark, parasitical on *Bostrychia mixta*, *Gelidium corneum* var. *crinale*, and *Apophlæa Sinclairii*.

The New Zealand specimens are of much smaller size than those from Cayenne, and the cellules composing the frond are somewhat differently shaped, whence we had at first considered that they might be regarded as a distinct species, having nearly the relation to the first that *D. ruscifolia* has to *D. Hypoglossum*. But a form, seemingly intermediate, found by Professor Bailly at New York, and communicated to us by M. Montagne, induces us to agree with this acute observer in regarding our plant as identical with the American species. Mr. Harvey is hardly satisfied with the position of this plant in *Delesseria*, and at one time proposed the MS. name *Caloglossa* for it, but he now fears that there are not sufficient data on which to found a genus.

74. *Plocamium *Corallorhiza*, nobis; *Thamnophora Corallorhiza*, *Ag.* *Fucus Corallorhiza*, Turn. *t.* 96. and *F. cirrhosus*, *ib. t.* 63.

HAB. Dusky Bay, *Forster*.

The variety *cirrhosa* only has been found at New Zealand, and it may possibly prove distinct from the Cape of Good

Hab. New Zealand, very abundant. *R. Cunningham* and all succeeding voyagers.

This appears to be the commonest species at New Zealand, and yet, though we have examined hundreds of specimens we have not seen any in fruit. *Fronds* 4-6 inches high, a line or rather more in breadth.

77. Plocamium *abnorme*, nobis; fronde angusta tenui nervo obsoleto percursa pinnatim decomposita virgata, pinnis pinnulisque alterne geminis sensim angustatis, ultimis angustissimis, ramulis subulatis integerrimis acutis, stichidiis axillaribus subsolitariis simplicibus furcatisve lanceolatis, nonnunquam e pinnulis ipsis ultimis transmutatis formatis.

Hab. Bay of Islands, *Lyall, Hooker.*

Very nearly related to *P. angustum* (*Thamnophora angusta*, J. Ag.), but differing in the fructification, which often affords a satisfactory character in this genus. In *P. angustum* the stichidia form dense racemose clusters, here they are commonly solitary and either simple or once forked; but what is strange, and has suggested the specific name, the ultimate pinnules themselves are frequently converted at their tips into false stichidia, which bear tetraspores like the rest! The habit resembles *P. coccineum*, from which the *alternately geminate* branching, the position of the fruit and the substance separate it.

78. Plocamium *coccineum*, Lyngb. *Fucus coccineus*, Turn. *t.* 59.

Hab. New Zealand, *Cunningham, Hooker, Lyall.*

79. †Plocamium *confervaceum*, Bory, *in Dup. Voy. p.* 164.

Hab. New Zealand, *Lesson.*

Possibly this scarcely known and ill characterised species may be the same as our *P. abnorme.*

SPHÆROCOCCOIDEÆ.

80. Rhodomenia *Hombroniana*, Mont. *Voy. Pole Sud. p.* 157. *t.* 1. *f.* 2. Hook. fil. *Fl. Antarct. t.* 72. *f.* 2.

Hab. Akaroa, *Raoul.*

✓ 81. Rhodomenia *variegata*, Mont. *Halymenia variegata*, Bory, *in Dup. Voy. t.* 14.

HAB. Bay of Islands, *Lyall.*

82. Rhodomenia *lusoria*, Grev. *in Hook. Comp. Bot. Mag.* 2. *p.* 329.

HAB. East Coast, *R. Cunningham.*

83. *Rhodomenia *corallina*, Grev. *Sph. corallinus*, Bory, *in Dup. Voy. p.* 175. *t.* 16.

HAB. New Zealand, *Lesson.*

✓ 84. Rhodomenia *dichotoma?* nobis, *in Fl. Antarct. t.* 72. *f.* 1.

HAB. New Zealand, *Lyall.*

? Mont.

A very imperfect scrap, possibly belonging to this species.

✓ Lyall

85. Rhodomenia *Montagneana*, nobis; stipite brevi crasso, fronde primaria oblongo-cuneata basi attenuata furcata simplicive carnoso-membranacea sanguinea madefacta fragillima frondes secundarias marginales et apicales cuneatas basi attenuatas furcatas dichotomasve emittente, coccidiis hemisphæricis prominulis numerosissimis per totam frondem sparsis marginatis, tetrasporis minutis oblongis zonatim quadripartitis in peripheria nidulantibus. ✓

HAB. Bay of Islands, *Lyall, Hooker.*

Primary frond 4-8 inches long, frequently broken off at the apices and emitting from the truncate extremity and in the structure of the frond there is a near resemblance to *R. polycarpa.* The fronds which produce tetraspores are larger, with broader segments and perfectly smooth, and the tetraspores are thinly scattered over the surface, not collected into cloudy patches. A magnificent species, nearly allied to *R. ornata*, Mont.; but, as we are assured by that author, perfectly distinct, and we have much pleasure in inscribing it with his name, as a mark of our respect, and gratitude for his able illustration of the Algæ of the Southern Hemisphere.

86. Rhodomenia? *coriacea*, nobis; fronde crassa coriacea siccitate cornea flabelliformi palmatim et pedatim laciniata, laciniis cuneatis latis apice fastigiatis obtusatis, axillis rotundatis.

HAB. Bay of Islands, *Lyall.*

The specimens are too imperfect to enable us to decide on the genus, and probably the above character is very inadequate, but we are unable at present to give a more intelligible one. It is possibly a large growing plant, but our specimens, evidently broken, are only 4-5 inches long; they have a circular outline and a remarkably thick leathery and almost horny substance. Their slices under the microscope exhibit a structure not unlike that of *Rhodomenia;* the centre being composed of large polygonal cellules, gradually smaller to the surface. All the cellules contain endochrome.

87. Plocaria? *furcata*, nobis; fronde basi cylindracea mox compressa angustissima lineari pluries dichotoma fastigiata rigida tenacissima siccitate cornea, axillis patentibus obtusis, apicibus obtusissimis rotundatis, coccidiis ad latera furcarum inferiorum insidentibus subimmersisve sparsis v. sæpe oppositis.

HAB. Bay of Islands, *Sinclair.*

Frond 6-8 inches long, not half a line in diameter, of equal breadth throughout, pretty regularly dichotomous, in outline broadly flabelliform. *Substance* very tough, rigid and horny when dry. *Coccidia* borne on the lower branches, often opposite, one at each side of the frond. *Colour* faded. The structure of the stem is denser than is usual in the genus, the cellules of the axis being smaller, and those of the periphery more filamentously disposed than in the typical species.

88. *Hypnea *musciformis*, Lamx. *Fucus musciformis*, Turn. *t.* 127.

HAB. New Zealand, *Sir Joseph Banks.*

CRYPTONEMEÆ.

89. Gigartina *livida*, J. Ag. *Fucus lividus*, Turn. *t.* 254.

HAB. Paroah Bay, *Lyall.*

90. *Gigartina *Chauvinii*, J. Ag. *Sphærococcus Chauvinii*, Bory, *in Duper. Voy. p.* 165. *t.* 20.

HAB. New Zealand, *D'Urville.*

91. †Gigartina *ancistroclada*, Mont. *Voy. Pole Sud. p.* 121. *t.* 7. *f.* 4.

HAB. Akaroa, *D'Urville.*

92. Gigartina *divaricata*, nobis, *in Fl. Antarct. p.* 187.

HAB. Bay of Islands.

Two imperfect specimens, seemingly belonging to this species.

93. Gigartina *torulosa*, nobis; caule (vix noto) subsimplici? subcompresso filiformi cartilagineo siccitate corneo, ramis

vaguely congregated but scarcely forming filaments; the periphery of beautifully moniliform elongated radiating filaments.

94. Chondrus *alveatus*, Grev. *Fucus alveatus*, Turn. *t.* 239.
Hab. New Zealand, *Sir Joseph Banks*, *R. Cunningham*, *&c.*

95. Chondrus *chondrophyllus*, Grev. *Fucus chondrophyllus*, Turn. *t.* 222.
Hab. Wangari Bay, *D'Urville.*

96. Iridæa *decipiens*, nobis; pusilla, fronde cartilaginea stipitata flabelliformi plana dichotoma, laciniis cuneatis pluries furcatis ultimis angustatis linearibus acutis, axillis rotundatis, margine nunc simplici nunc ramenta linearia simplicia pinnatim emittente, favellidiis nunc maculæformibus immersis per totam frondem sparsis ellipticis oblongisve, nunc in verrucis umbilicatis ad apices ramentorum sessilibus immersis.
Hab. New Zealand, *Raoul.*

Two states of this plant are before us, one of which so closely resembles *Chondrus crispus*, that except by the fruit, and the ramenta fringing the margin, we cannot distinguish it; the other has a mixed character between a very slender variety of *Iridæa stiriata*, and a broad state of *Gigartina pistillata*. These two forms are very dissimilar, but one specimen referable by its fructification to the first, has more the habit of the latter, and thus connects the two. *Iridæa stiriata* and *J. Radula* have a similar *double* production of favellidia, one immersed in the frond, the other crowning the ramenta; and *J. stiriata* presents such wild variations in form, and sometimes so closely resembles the wart-bearing variety of the present species, that, though we have never seen any state exactly similar to what we now describe, we cannot entirely divest ourselves of doubt as to the validity of the present species. And yet the *chondroid* form is so unlike *J. Radula*, that we cannot well unite them.

97. Iridæa *stiriata*, Bory. *Fucus stiriatus*, Turn. *t.* 16.
Hab. Paroah Bay, *Lyall.*

98. Iridæa *Radula*, Bory. *Fucus bracteatus*, Turn. *t.* 25.
HAB. Bay of Islands.

99. *Iridæa *micans*, Bory, *in Dup. Voy. t.* 13.
HAB. Akaroa, *D'Urville.*

100. Halymenia *furcellata*, Ag.
HAB. East Coast, *R. Cunningham.*

101. †Halymenia *dubia*, Bory, *in Belang. Voy. p.* 32.
HAB. New Zealand, *D'Urville.*

102. Halymenia *Novæ Zelandiæ*, Montag. *Voy. Pole Sud. p.* 107. *t.* 12. *f.* 2.
HAB. Akaroa, *D'Urville.*

103. Dasyphlæa *insignis*, Mont. *Voy. Pole Sud. t.* 8. *f.* 3.
HAB. Akaroa, *D'Urville.*

104. Catenella *Opuntia*, Grev. *Fucus Opuntia*, Turn. *t.* 107.
t. HAB. New Zealand, *Lyall.* Apply from Mrs Wyatt's papers.

105. Chrysimenia *secunda*, nobis; frondibus (pusillis) tubulosis membranaceis flaccidis roseis cæspitosis intricatis ramosissimis, ramis curvatis ramulisque patentibus sæpissime secundis linearibus obtusis æqualibus, ramulis distantibus paucis brevibus.
HAB. New Zealand, *Raoul.*

Fronds densely tufted, two inches high, setaceous, much branched; the branches generally secund and arched. *Colour* figure we were well acquainted with what is now called *M. Jaubertiana*, but which we had unhesitatingly referred to Turner's *Fucus abscissus*. Nothing at all more resembling Turner's figure is known to us. Some of our specimens indeed might well pass for that he has depicted; while others resemble closely the larger form figured by the French Algologist. The difference mainly insisted on by M. Montagne lies in the stem, which in *M. Jaubertiana* is *cylindrical*, in *Fucus abscissus* "flat without veins or midrib." Were the *M. Jaubertiana* cylindrical throughout, we should not hesitate to agree with Montagne. But it is not so. The frond is most cylindrical below, it gradually diminishes upwards, and the upper portion is perfectly flat. The larger the specimen, the rounder is the stem, and in young specimens we find the frond compressed even in its lowest part, and if Turner's figure be taken to represent a young specimen, it is a characteristic. And it should be observed, that though he describes the frond as *flat*, the figure of a transverse section which he gives evidently represents a *compressed* frond.

✓ 108. Gelidium *corneum*, Lamour. *Fucus corneus*, Turn. *t.* 57.
HAB. New Zealand, several varieties.

✓ 109. Gelidium *lucidum*, Harv. *Fucus lucidus*, R. Br.! Turn. *t.* 238. *Phyllophora lucida*, Grev.
HAB. New Zealand, very common.

A beautiful plant, generally recognisable by the broad, flat, more or less midribbed frond and shining surface; but varieties occur which approach the var. *sesquipedale* of *G. corneum*. We, have ascertained our plant to be the same as that of Turner, having been favoured by Mr. Brown with an inspection of his original specimen.

✓ 110. Ctenodus *Labillardieri*, Kütz. *Fucus Labillardieri*, Turn. *t.* 137.
HAB. New Zealand, *Sinclair*.

APOPHLÆA, Harv.

Frons cylindrica, cartilaginea, solida, crassa, dichotoma, e filis tenuissimis strictis parallelis peripheriam versus radiantibus constituta. *Peripheria* (madefacta) fungoso-incrassata, rupta, decidua. *Fructus* ——. Algæ *littorea intense rubra, uncialis, crassissima, pluries dichotoma, fastigiata.*

111. Apophlæa *Sinclairii*, nobis.

Hab. New Zealand, ~~Sinclair.~~ J. D. Hooker

In a dry state this anomalous production resembles a very robust *Lichina*, being black and rigid. When moistened, however, this appearance wholly vanishes. The black woody wrinkled stems become of a brilliant crimson, and their outer coat, imbibing moisture much more readily than the very dense axis, swells to twice or thrice its bulk when dry, and is broken in all directions, and falls away in flakes, leaving the solid axis behind. The frond is from ½ an inch to an inch in height, but when moistened is 2-3 lines in diameter!

Ceramieæ.

112. Ballia *Brunonis*, Harv. *Sphacelaria callitricha*, Ag. *Ballia callitricha* and *B. Hombroniana*, Mont.

Hab. New Zealand, East Coast, *Colenso* (223).

We retain the specific name imposed by Mr. Harvey in founding the genus, given in honour of the original disco-

118. Conferva *herpestica*, Mont. *Voy. Pole Sud. p.* 6.
Hab. Bay of Islands, *Hombron*, *Hooker*.
119. Conferva *clavata*, Ag. *Syst. p.* 99.
Hab. East Coast, *Colenso*.
120. Conferva *bombycina?* Ag.
Hab. In fresh water.

(N.B. Besides these, there are 4 or 5 other *Confervæ* received from Mr. Colenso, but in so imperfect a state, and entangled together, that it is impossible to extricate them, or to describe them in intelligible language.)

121. Enteromorpha *compressa*, Ag.
Hab. New Zealand, abundant, *Hooker*.
122. Enteromorpha *intestinalis*, Ag.
Hab. Bay of Islands, &c. *Hooker*.
123. Ulva *Linza*, Ag.
Hab. Bay of Islands, &c. *Hooker*.
124. Ulva *latissima*, Ag.
Hab. Shores of New Zealand, abundant, *Hooker*.

(*To be continued.*)

[illegible] [illegible].

BOTANICAL INFORMATION.

Notes of a Botanical Visit to MADRAS, COIMBATORE, *and the* NEELGHERRY MOUNTAINS; *by* G. GARDNER, ESQ. F.L.S., *Superintendent of the Royal Botanic Gardens, Ceylon.*

(*Continued from p.* 409.)

Our first botanical excursion of any length was to the summit of Dodabetta, which is about four miles distant from Ootacamund. The ascent is so gradual that one may ride the whole way. We of course met with much that was new to me, although almost every thing was quite familiar to Dr. Wight. On shady banks, and even in open exposed places, the wild Strawberry (*Fragaria elatior*), grows in the greatest profusion, from the level of Ootacamund, even to the very summit of the mountain, in which latter situation I found it, both in flower and in fruit. On the open grassy hills we saw several other herbaceous plants, such as *Anemone Wightiana*, *Ranunculus cordatus*, *Dipsacus Leschenaultii*, *Wahlenbergia Indica*, *Bupleurum distichophyllum*, *Pimpinella Candolleana*, and *Leschenaultii*, *Valeriana Brunonis*, and several species of *Senecio* and *Gnaphalium*. The shrubby plants which we met with in similar situations, were an undescribed species of *Teucrium*, allied to the *T. tomentosum*, abundance of *Gaultheria Leschenaultii*, *Anaphalis Neelgherriana*, *Cotoneaster buxifolia*, *Hedyotis articularis*, &c. In the woods which fill the hollows and ravines, we found some that were in flower, besides those which I have already enumerated, such as an *Euonymus*, *Microtropis ramiflora*, *Monocera ferruginea*, *Eugenia calophyllifolia*, and a *Celtis*. At the summit I was rewarded with an old Scotch acquaintance, *Prunella vulgaris*, and *Alchemilla Zeylanica*, Moon, a plant so nearly resembling the *A. vulgaris* of Europe, that it has been considered as such by Dr. Arnott. Both Dr. Wight and I, however, have satisfied ourselves from a comparison of it with British specimens, that they are essentially distinct. The rocky part of the summit was gay with the large yellow corymbs of *Kalanchoe grandiflora*. In clear weather a fine view is said to be obtained from the falls we passed through the garden and grounds belonging to Kaitie, the property of Lord Elphinstone. On the right hand side of the avenue leading to the house there is a remarkably healthy English Oak tree, nearly twenty feet high; and nearly opposite to it a few Cypresses about the same height. The garden contains various kinds of European fruit trees, such as the Peach, Apple, Plum and Pear. The Peach bears plentifully, but its fruit, like that which I have met with on the mountains of South America, is very far inferior to what is grown in the open air in England. Apples do not succeed, those I saw being as small as Crabs, and very little superior to them in flavour. As in the other gardens on the hills, European flowers and vegetables thrive admirably. The road to the falls from the house leads through a long, flat valley, along which a small stream runs. In this valley very few plants were in flower: notwithstanding that it is much lower than the valley in which Ootacamund is situated, vegetation had suffered much more from the frosts of January. The young leaves and branches of the Barberry, the Bramble, and other shrubs, all appeared as if they had been scorched by fire. There was scarcely any herbaceous vegetation, and many of the trees and shrubs being here deciduous, the country bore a very wintry appearance. The banks of the stream were lined with the Barberry, *Ligustrum Perottetii*, *Rhamnus hirsutus*, the *Rhododendron*, *Salix tetrasperma*, and *Rubus Wallichianus*. On more elevated parts *Cotoneaster buxifolia* grew very profusely; but here we met with none of it in flower. The stream which flows through this valley is about the size of the one which runs through Campsie Glen, near Glasgow, and is joined by another of equal magnitude immediately above the fall, which is a slightly inclined basaltic precipice about two hundred feet in height. After this gentle leap, the water flows through a beautiful wooded valley into the Coimbatore country. At the upper part of the fall, we collected a pretty species of *Asystasia*, *Carissa paucinervia*, A. De C., *Exacum Wightianum*, and a very handsome species of *Aerides (A. Lindleyana,* Wight MSS. sparingly in flower. A few specimens were also obtained o the beautiful *Lysimachia Leschenaultii.* Dr. Wight inform me that many curious herbaceous plants grow on the rock here in the months of August and September, but o which almost no traces were now to be observed. One o these is a large-flowered Lily, very much resembling Wallich' *Lilium longiflorum.*

In the jungles, at the foot of the falls, vegetation was in more active state. Here we collected specimens of *Photini Notoniana, Loranthus amplexifolius, Viscum ramosissimum Sonerila speciosa, Jasminum erectiflorum,* a delicate littl species of *Monochilus,* an undescribed *Vanda, Barleri involucrata, Passiflora Leschenaultii,* and numerous othe plants which were mostly new to me. One of the mos curious of them all was a species of the *Balanophoræ,* perhap the same as Dr. Arnott has described under the name o *Langsdorffia Indica,* but which has now been reduced to th genus *Cynopsole.* In a dark part of the forest, I found a single specimen of *Clathrus cancellatus,* one of the most beautiful, at the same time that it is one of the most fœtid of fungi. I have also met with it two or three times in the mountain forests of the Central Province of Ceylon. About shrubs were *Osbeckia Wightiana*, an undescribed *Agapetes*, and several very handsome *Crotalarias*.

The next excursion we undertook included an absence of three days. Our head-quarters were a Bungalow about ten miles from Ootacamund, on the road leading to a pass, which descends into the Mysore territory. This place is called Pycarrah. Our ride was through a beautiful, open, hilly country, a few small patches of wood occurring in hollows, or in the deep gashes which intersect the hills. Dr. Wight pointed out to me several swampy tracts, in which *Parnassia Wightiana* grows in great plenty in the rainy season. In a small wood, by the side of the road, we found *Viburnum hebanthum* in a fine state; and on the margins of small streams *Eurya Wightiana*, a small shrub very much resembling the tea-plant in habit. We kept along the road for about eight miles, and then struck off to the left for the purpose of reaching the Pycarrah, a stream of some size which passes the Bungalow of the same name, and botanizing along its banks. In our progress we passed through several small woods which yielded us a few good things, such as an *Olea*, *Ophiorhiza Brunonis*, several fruticose *Acanthaceæ*, and an undescribed species of *Eugenia* (*E. montana*, Wight, MSS). We also passed over a rather high, bare hill, on which *Anemone Wightiana* was sparingly in flower. On the summit of this hill there is a large circular Cairn about four feet high, with an open well-like cavity in the centre. It had the appearance of great antiquity, and was over-grown with small shrubs and other vegetation. Similar cairns are seen on the tops of nearly all the hills of the Neelgherry range, and when opened have been found to contain generally from twenty to thirty urns of clay, often of very elaborate workmanship. Iron and brass utensils are also occasionally found in them; but so roughly used by the hand of Time, that they fall into dust on being touched. These Tumuli have lately been exciting the attention of Captain Congreve, an Indian Antiquary, and the conclusion he has come to is, that they are of very high antiquity, and owe their origin to a pastoral race which still inhabit the higher ranges of the Neelgherries, and which he has undertaken to prove are of Scythian descent. On the Neelgherries these people are known by the name of Tandawars, or more commonly Toders. They engage in no agricultural pursuit; but rear large herds of buffaloes, the milk of which forms the principal part of their food, and great numbers of which animals are sacrificed in a most cruel manner at the death of their chiefs. These natives are nearly black, and are a very wild-looking race of beings, having only the lower part of their body covered with a few rags. It is said that female infanticide was formerly practised among them to a great extent.

Before reaching the banks of the Pycarrah, we passed through a large marsh full of *Acorus Calamus*, not then in flower. Our walk along the side of the river was very productive. All along it, a pretty species of *Osmunda* grows luxuriantly, and I was fortunate in finding it in beautiful fructification. The effects of the past winter were as visible here as in the Kaitie valley; the tender fronds of the *Osmunda*, and the young shoots of an *Agapetes*, and a fruticose *Hedyotis*, being very much browned. We crossed the stream at a place where the

the previous day. The banks, which are high and rocky, yielded a number of fine plants, such as *Coleus barbatus, Kalanchoe grandiflora, Impatiens Goughii,* a large *Eriocaulon, Hedyotis verticillaris,* (a curious low-growing plant, with broad ribbed leaves, and more resembling a *Plantago* than a *Hedyotis*); *Drosera Burmanni* and *peltata,* a *Carex, Osbeckia Gardneriana,* a *Campanula,* and a pretty suffruticose *Gnaphalium.* The *Rhododendron, Agapetes arborea, Ilex Wightiana,* and *Photinia Notoniana,* grow along banks; and on the branches of nearly all of them the very curious coral-like *Viscum moniliforme* is seen in great quantities. Dr. Wight pointed out to me on the stems and branches of the *Rhododendron,* as well as on rocks, a little *Eria* (*E. retusa,* Wight, MSS.), the depressed pseudo-bulbs of which are beautifully covered with a fine fibrous net-work. It was not in flower; but I have obtained fine specimens from his Herbarium.

Our rambles during the day explored some of the wooded ravines in the neighbourhood. In one of these we met with a new species of *Cynopsole,* growing parasitically on the roots of a large tree, (*Myrsine capitellata*). It is much smaller than the one found at Kaitie. Our researches were besides rewarded with two species of *Microtropis, Gardneria Wallichiana,* a shrub which climbs to the tops of the highest trees, a *Jasminum,* and several mosses and ferns. Here *Myrtus tomentosa,* and *Dodonæa Burmanni,* attain the size of trees. The fruit of the former, when ripe, is very delicious, resembling the gooseberry in flavour, indeed, it is called by Europeans the Hill Gooseberry, and from it they prepare a delicious jelly. *Osyris Wightiana,* and *Jasminum aureum,* are common in dry pastures around Pycarrah.

On the succeeding day our excursion extended to a distance of upwards of eight miles along the road which leads into the Mysore country. The scenery through which we passed, though not so grand as some of our after excursions, is perhaps the most pleasing of any to be met with on the hills. In every direction large swelling hills are to be seen, covered with grass—at this season having the appearance of ripe corn—intersected with patches and long stripes of verdant woods, the varying tints of the foliage of which form pictorial combinations, on which the eye dwells with pleasure. There is one tree conspicuous above all the others, not only from its abundance, but the peculiar light green colour of its leaves. It is as yet a 'planta innominata,' forming a new genus belonging to the natural order *Stilaginaceæ*. Between Pycarrah and the next Bungalow, which is at a place called Neddawattum, we added very largely to our collections. On the road-side a fine tall species of *Artemisia* (*A. grata*), was very common. In a wood through which we passed, we saw a fine large tree, the top of which was nearly one mass of white flowers. It proved to be a *Symplocos*, and we have since ascertained that it is not described in De Candolle's Prodromus. Here we also met with an undescribed species of *Coffee*, though one which Dr. Wight had previously found, and several fruticose *Acanthaceæ*. The stems of the large trees in the more dense parts of the wood, were covered with mosses, ferns, lichens, various kinds of *Orchideæ*, and an *Æschynanthus*.

patiens latifolia, and several species of *Plectranthus* and *Pogostemon*. We descended the pass a short way, which leads into the Mysore country, but did not meet with much to interest us. There were some fine peeps into the low country, which is much more thickly wooded than that which lies between Madras and the Neelgherries.

Our last excursion, occupying eight days, was the most productive of the whole. It was to the western slopes of the chain, or those which lead into the Malabar country. On our way thither we spent three days exploring the woods and mountains in the neighbourhood of a place called the Avalanche—from a great land-slip which has taken place on the side of a high hill, about sixteen miles from Ootacamund. Here, as usual, we were domiciled in the public Bungalow. The country through which we passed is very similar to that which leads to Pycarrah; but the hills at the Avalanche are far higher, and more rugged in their outline. The first day was spent on a high hill behind the Bungalow, where there are some well-wooded ravines. In these we met with *Sonerila speciosa* in fine flower; a third species of *Cynopsole*, much larger than the other two, the stems being nearly a foot in length, and the fructified part as large as one's fist; a new *Isonandra*, *Michelia Neelgherica*, *Gomphandra polymorpha*, *Blumea pterodonta*, and a new *Stylocoryne*. By the sides of these jungles grew an undescribed *Moonia*, which Dr. Wight has dedicated to his friend Dr. Arnott, a species of *Gynura*, and *Senecio corymbosa*. The open grassy parts of the hill yielded us *Gerardia Sopubia*, an *Ophilia*, *Ranunculus cordatus*, and *Prunella vulgaris*. On the succeeding day we explored a long densely wooded ravine, which runs up to the top of the same hill, and found a very fœtid *Mephitidia*, a *Cinnamomum*, *Hedera rostrata* (Wight MSS.), and the new *Symplocos*, a few ferns and mosses, and a *Rutaceous* shrub, which, before we obtained the ripe fruit, we considered to belong to the Chilian genus *Pitavia* (*Galvesia*, Ruiz et Pav.), the flowers having exactly the same structure. The fruit, however, in place of being a drupe, is a dry capsule.

Early on the morning of the third day we proceeded to investigate a high range of hills immediately opposite the Bungalow, and about two miles distant from it. We rode along the more level part, so as to be fresh for the steeper portion. In the moist flats grows a very pretty little *Gentian* (*G. abscondita*, Zenk.), with bright blue flowers; while on the higher and dryer fields *Hypericum Mysorense*, a shrub from four to six feet high, with large golden blossoms, is seen in the greatest plenty. In a wood, by the margin of which we passed, and into which we occasionally dipped, we found a *Pygeum* in fruit, *Symplocos obtusa*, several kinds of *Lauraceæ*, and *Myrtaceæ*. In open parts at a greater elevation several species of *Crotalaria*, and *Osbeckia Gardneriana*, were in full bloom. After scrambling up a very steep ascent, and when near the summit, we visited the residence of a Bear, but did not find him at home. This was a hollow, under a projecting ledge of rock, and judging from certain appearances, he had not been long gone. The selection of this spot for his den showed great wisdom; for not only was it well protected from the prevailing winds during the season of the rains, but in case of danger it were thickly studded with the bright yellow flowers of a Buttercup (*Ranunculus cordatus*). On our return, we collected specimens of two or three *Laurineæ*, and a large arboreous Olive allied to *Olea glandulosa*.

On the following day, we started from the Avalanche bungalow and went on to another at a place called Sispara, about fifteen miles distant. Shortly after leaving we had to ascend nearly 1000 feet above the level of the Avalanche valley, and from this elevation we commanded a fine view of the upper ranges of the Neelgherries, including Ootacamund, and the massive rounded summit of Dodabetta. The route thence lay through a truly beautiful, but uninhabited country; the road winding now along the sides of high grassy hills, now over their bleak summits, and now through beautiful vallies by the sides of limpid rivulets, the margins of which are adorned with Rhododendrons, and numerous other flowering shrubs. In one of these vallies, somewhat resembling that of Neuera Ellia in Ceylon, but smaller, the Wild Strawberry (*Fragaria elatior*), and *Alchemilla Zeylanica* form patches of immense size. It is curious that while the Neelgherries, and the mountain ranges of Ceylon have many European forms of plants in common, yet each presents a few which are peculiar to itself. Thus the *Prunella vulgaris*, *Parnassia Wightiana*, *Lysimachia Leschenaultii*, *Rosa Leschenaultii*, the four species of *Viburnum*, and the two of *Lonicera* of the Neelgherries, have not yet been discovered in Ceylon; while, on the other hand, the *Agrimonia Eupatorium*, *Ranunculus hastatus*, and *Viola Walkeri* of Ceylon, are unknown on the Neelgherries. They each possess a *Dipsacus;* but these are distinct, though nearly allied, species.

Before we got half way to Sispara, we were enveloped in a dense mass of clouds, which came rolling along from the Malabar country, and were soon drenched to the skin by the rain which they gave out. The cold was excessive, and we were glad to dismount and walk for the last two miles. We felt it most while passing along a high range which overlooks the low country. Here we saw convincing proofs, in the shape of what may be called in geological language, *recent deposits*, that a large herd of Elephants had gone over the same ground only a short time before. Notwithstanding the rain and the cold, we diverged a considerable way from the road to visit the only station which Dr. Wight knows for *Hypericum Hookerianum*, and, even there, only one patch was to be seen about twenty yards square. Oddly enough too, this is situated in the centre of a flat swamp about half a mile in circumference. To this spot, for what reason I know not, the European residents have given the name of 'New England.' We found the *Hypericum* in fine flower, it is a very handsome species. Some way beyond this, we came upon one of the most remarkable pieces of natural scenery which is to be met with on the hills, which is called the 'Devil's Gap;' but whether this name commemorates his arrival on the hills, or his exit from them, no one now seems to know; though the probability is that it was not the latter. It is an immense gap, upwards of 150 feet wide, in the centre of a high hill, and has evidently been caused by the rending asunder of the latter. The road passes very close to it; and forms at its close, a deep wild-wooded ravine, ultimately terminating in a broad valley which sweeps down into Malabar: the view from it is magnificent indeed.

the next part of Wight's 'Icones,' under the name of *Bursinopetalum arboreum*; the fruit is the size of a small Plum, and the calyx is adherent, as in Alph. De Candolle's new genus *Hypocarpus*. By the margins of jungles grew a very curious new *Hedyotis*—a shrub about six feet high, but of which we only obtained one or two miserable specimens in flower; and a very pretty small fruticose species of *Impatiens* (*I. Munroi*, R. W.) On the upper parts of the mountains there was but little herbaceous vegetation, our visit being at the end of the dry season. One of the most remarkable plants which these rocky places afforded was a new shrubby species of *Anisochilus*.

By far the most abundant harvest we reaped in this quarter was on the day devoted to an excursion about six or eight miles down the pass. The road leads through one continued forest. From the greater amount of moisture which this slope of the chain receives, vegetation here exhibits itself in its most luxuriant state. I shall enumerate some of the more remarkable or beautiful plants, taking them in succession as they occurred. Our first acquisition was a little caulescent *Dorstenia*, growing on shady banks by the road side, *Impatiens cuspidata*, *Lobelia nicotianæfolia*, *Torenia Asiatica*, the large-flowered variety, a new *Isonandra*, a new *Symplocos*, three species of *Mephitidia*, a new species of *Choripetalum*, a new species of Blume's genus *Bulbospermum*, a fine *Euonymus*, two kinds of *Hedera*, one of them with large pinnated leaves, and a large-flowered *Ceropegia*. We were now about three miles down, and having arrived at a place where there is a large, rocky, moist, and rather steep part of the side of a high hill, destitute of trees, but covered thinly with shrubs and herbaceous vegetation, Dr. Wight informed me that the previous year he found on these rocks a species of *Anemia*; and this being a genus to which I have paid a good deal of attention, and which was considered till within a few years ago, to be peculiar to tropical America, when a solitary species was discovered in Africa, I lost no time in clambering up the rocks to possess myself of an Indian species. The rock was very steep, but by the aid of a very curious kind of Wild Fig, which clings to it like ropes, we soon got up. This Fig bears a fruit larger than the common Fig, on thin creeping, rooting stems, which are destitute of leaves; they, the leaves, appearing only on the extreme branches. You may imagine my delight at finding in the greatest plenty, but not in a very good state of fructification, *a true Anemia*, so much resembling *A. flexuosa*, which I have frequently collected in similar situations near Rio de Janeiro, and on the Organ mountains, that I feel almost quite certain it is the same. This, however, shall be determined by a comparison of specimens on my return to Ceylon. On the rocks we also gathered a fine *Asplenium*, and an *Aspidium*, a *Begonia*, and plenty of the new fruticose *Anisochilus*, which we first met with near the bungalow at Sispara. Immediately below this rock grew a *Pavetta*, a new *Eugenia*, and two undescribed species of *Sonerila*. Further on, our collections were enriched by two fine *Acanthaceous* plants, *Impatiens diversifolia*, an undescribed *Microtropis*, and many other new or little known plants. The lowest part of the pass is covered with forest-trees of immense size, consisting chiefly of a kind of wild Nutmeg, a fine *Euphor-*

present occupied with a survey of the Neelgherry mountains. We passed the night at Kotagherry, about fifteen miles distant from Ootacamund, and on the following morning rode down to a small Coffee plantation, belonging to Capt. Oughterlony's brother. There is no residence on the estate; but the Captain having sent his tent, we breakfasted in it. The Coffee plants do not grow so luxuriantly as in Ceylon, from the very obvious reason that the climate is too dry; the coffee produced here is, however, of very excellent quality, being highly flavoured. From all that I have seen of the Neelgherries, no part of the range seems so well adapted for the cultivation of this shrub, as the Western, or Malabar slopes, which exhibit all the capabilities of the richest Coffee districts in Ceylon. In the afternoon we rode down to the Bungalow at the foot of the hills, slept there, and next day reached Coimbatore.

The following plants were added to our collection between Kotagherry and the plains:—*Impatiens fruticosa*, *Monosis Wightiana*, *Lantana dubia*, fine specimens of *Lonicera Leschenaultii* and *Viburnum acuminatum*, an *Ardisia*, *Buddleia discolor*, *Glossanthus Malabaricus*, a new species of *Phœbe*, a fine large tree, *Schmidelia Rheedii*, an undescribed *Jasminum*, *Semecarpus Anacardium*, an *Olea*, the beautiful blue-flowered Thunbergia-like *Meyenia Hawtayneana*, &c., &c. The lower part of the Kotagherry pass is steep, and the road veiy bad, but the view from that part of it, where the low country first comes in sight, is exceedingly fine, and as a whole put me very much in mind of the rich plains which are overlooked by the Malvern hills.

You will be glad to learn that Dr. Wight has the third part of his 'Icones' in the press, which with some succeeding ones, is to be principally devoted to the productions of the Neelgherries. A selection from these, coloured, he is also publishing under the name of "Neelgherry Plants." Of this Work there will only be 100 copies, to consist of four or five parts of 50 plates each. At present he has two native artists and a plant-collector constantly employed, at his own expense. It is only those who know how Dr. Wight is situated, who can fully appreciate the difficulties he has had to contend with in effecting what he has towards the elucidation of the Botany of the Southern parts of India. Living upwards of three hundred miles from Madras, where the lithography and printing are executed, and much of his time being occupied with professional engagements, it is astonishing that he has been able to accomplish so much. It is now his intention to resume the publication of his "Illustrations of Indian Botany," of which the last part was the first portion of the second volume.

Having at last completed the determination of the Ceylon Collections, and the selection of an immense number of duplicates from Dr. Wight's Indian Herbarium, I left Coimbatore, on the 13th of April, to return to Ceylon *viá* Cochin, on the Malabar coast. The Malabar country is far more fertile than the Carnatic, and covered with fine forests, similar to those on the West coast of Ceylon, a difference no doubt caused by the great quantity of rain which falls during the S.W. Monsoon. Some of the forests I passed through were almost entirely composed of magnificent Teak trees. At Trichoore, a native town about fifty miles from Cochin, I remained two days with the officer who commands a detachment of the Madras Native Infantry now state of intoxication. At Cochin, I had to wait a week for a vessel, but during that time I saw little that could interest a Botanist, for it was the end of the dry season, and there was not much in flower. After a run of three days we dropped anchor in this port, and my collections have all been landed safely, and are now on their way to Kandy.

GEORGE GARDNER.

Colombo, Ceylon, 14th May, 1845.

BOUGUERIA, *Novum Plantaginearum Genus*, *Auct*. J. DECAISNE.

(*With a Plate*, TAB. XIX.)

BOUGUERIA.—*Flores* hermaphroditi fœmineique in eadem spica. *Bractea* medio carnosa, lateribus late membranacea, florem tegens. *Calyx* 4-partitus persistens, dense pilosus, foliolis anticis paulo majoribus. *Corolla*(?) hypogyna, tubulosa, scariosa, limbo in 3 4 lobos parvos irregulares diviso. *Stamen* (in fl. hermaphroditis), unicum, tubo medio insertem, cum laciniis alternans. *Filamentum* longe exsertum, flaccidum, glabrum. *Anthera* basi adnexa et subemarginata, bilocularis, loculis longitudinaliter dehiscentibus, apice brevissime mucronulata. *Pollen* (madefactum) globosum. *Stylus* 1, gracilis, longe exsertus, teres, inferne glaber, parte media superiori papilloso-stigmatosus. *Ovarium* rotundo-compressum, sessile, uniloculare, uniovulatum; *ovulum* peltatum, reniforme, hilo centrali, placentario brevi centrali crassiusculo affixum. *Capsula* indehiscens, 1-sperma, compressa, medio utrinque costata, ossea, rudimento styli mucronata. *Semen* unicum, peltatum, reniforme. *Integumentum* exterius tenue, atro-virens. *Perispermum* semini conforme, carnosum, albidum. *Embryo* subarcuatus, supra perispermum transverse periphericus. *Cotyledones* oblongæ, carnosæ. *Radi-*

cula teres cotyledones longitudine æquans. *Plumula* inconspicua.

Bougueria *genus, medium inter* Plantaginem *et* Littorellam, *priori habitu accedit, capsulæ structura ad posteriorem vergit.*

Hoc genus Andicolum dicavi memoria illustr. *Bouguer,* qui Condamineo comitante, excelsorum Peruviæ montium altitudinem mensus est.

BOUGUERIA NUBICOLA.

B. foliis linearibus, pedunculis folio brevioribus, bracteisque glabris, calyce dense piloso. (Tab. XIX.)

Crescit in Bolivia inter saxorum porphyreticorum fissuras in montibus nivosis sub nomine *las lagunas* designatis, urbem *Potosi* alte superantibus, inde circa 4,888 metr. alt. supra Oceanum.

Flores fructumque perfecerat Martio (b. specim. 6 sicca in Herb. Mus. Paris. a cl. *Alc. d'Orbigny* relata.)

Herba bipollicaris, perennis, radice crassa, cæspitosa, exsiccata nigrescens; habitu *Plantaginis nubigenæ,* Kth. *Folia* linearia, integerrima, carnosula, glabrata, juniora albo-pilosa. *Pedunculi* axillares, foliis breviores. *Flores* spicato-capitati. *Bracteæ* latæ membranaceæ fere ut in *Pl. montana,*

Observations on the Botany of Great Arran Island, Galway Bay, made during an excursion thither in August and September, 1845; *by* WM. ANDREWS, ESQ. M.R.I.A., *Sec. to the Nat. Hist. Society of Dublin, &c. &c.*

After a tedious passage of two days and nights from calms and dense fogs, I arrived at Great Arran early on the morning of August 31, and the day being delightfully sunny, I rambled over the north western parts of the island. In several enclosures, (for I cannot term them fields, this botanically interesting island being intersected in every direction by innumerable loosely piled stone barriers or bounds) I saw especially near the road leading to the light-house, *Helianthemum canum* growing in such abundance that I am surprised that it has, until this day, escaped the notice of even the most indifferent observer. These dreary and seemingly barren sheep enclosures present continued platforms of huge limestone flags, and where a separation of the rocks takes place, the hollows afford a scanty, but sweet herbage, and the botanist is greeted by an assemblage of rare and beautiful plants, peculiar to some of the limestone districts of Britain. Here *Helianthemum canum* profusely covered the bare rock, insinuating its strong roots so deeply into the crevices as to render it difficult to procure good specimens for cultivation; while the delicate little *Galium pusillum*, so strikingly different in its growth and character from *G. saxatile*, *Cerastium arvense*, var. *strictum*, similar to the form found by me in 1842 in the western Plasket Island, coast of Kerry; *Arenaria verna*, *Asperula Cynanchica*, and the rich purple blossoms of *Geranium pratense* intermingled with it in quantities. The deeper fissures or miniature chasms were lined with the pale green tresses of *Adiantum Capillus Veneris*, the huge leaves of the Irish Ivy, *Lonicera Periclymenum*, *Rubus saxatilis* and *R. cæsius*. The species of Ferns appeared to be few, and, with the exception of the *Adiantum*, none but the common kinds, *Grammitis Ceterach*, *Aspl. Trichomanes*, *A. Ruta Muraria, A. marinum,* (magnificent specimens), *Scolopendrium vulgare,* and *Polypodium vulgare* and *Pteris aquilina,* the two latter in vast profusion. Several sunny banks were studded with *Arabis ciliata, A. hirsuta,* and an *Arabis* bearing closely the character of *A. bellidifolia* with perfectly smooth obovate petioled entire radical leaves. The commonest thistle in the grassy plots was *Carlina vulgaris,* and with it I met a singular specimen* which I enclose, but I have not been able to find reference to the species. In the sands of the Island *Brassica Monensis* and *Convolvulus Soldanella* were plentiful, and in several stations the *Allium carinatum,* alluded to in the additions to the 5th edition of "British Flora." I suspect that I have also obtained the true *A. Ampeloprasum.*

In the N.W. part of the Island, I collected *Hesperis matronalis,* or, perhaps, more properly, *inodora;* but could no where meet with *Matthiola sinuata,* recorded by Mr. J. T. Mackay as having been detected in Arran many years since. On the sandy turfy banks *Astragalus hypoglottis, Arenaria verna, Sagina maritima* and *Neottia spiralis* were frequent; the two first having been previously noticed by Mr. R. Ball.

The present rough observations must be considered a very imperfect account of the Botany of Arran, because I have not had leisure, since my return home, to examine my collection

SCHIMPER'S MOSSES.

European and other Mosses on Sale by M. W. P. Schimper, Strasbourg.

In order to defray a portion of the heavy expenses incurred by the publication of the *Bryologia Europæa*, M. Schimper will immediately prepare for sale a certain number of sets, containing the normal forms of nearly all the European Mosses, each species to be represented by perfect and multiple specimens, arranged like those of Drummond's American Mosses. The price of each set will be £8 sterling.

Two peculiarly rich sets, corresponding exactly with the Herbarium of the University af Strasbourg, containing all the different forms and varieties of European Mosses, gathered in numerous localities, together with more than two hundred exotic species, of which one hundred are new, or, at least, undescribed, may also be had for £15 each. Persons desirous of purchasing are requested to apply direct by letter to M. Schimper, stating the mode in which their respective orders are to be transmitted.

Intelligence from MR. BRIDGES *in* BOLIVIA.

Cochabamba, April 3rd. 1845.

"Sir William,

"Since my arrival in Bolivia, now six months ago, I have not had the pleasure of receiving a letter from you. Previous to my departure from Valparaiso, I wrote to you after I had the honour to receive the letter which your kindness and influence obtained for me from his Lordship, the Earl of Aberdeen, destined for H.B.M. Consul in Bolivia, Charles Masterton, Esq. On reaching Chuquisaca, the capital of Bolivia, I immediately presented his Lordship's letter, and I am happy to inform you that Mr. Masterton gave me a most cordial and obliging reception, and made known to his Excellency, the President, General Ballivian, through the Minister of Foreign Affairs, the object of my journey to Bolivia. A few days afterwards, I had the honour of an interview with his Excellency, who received me with unexpected kindness, and most generously promised to provide me with letters to all the Prefects or Governors of the various Departments of the Republic, which I received previous to my departure from Chuquisaca, and I have in all parts met with every attention from the authorities. After the receipt of this, you will please do me the favour, either verbally or by letter, to present my most sincere and grateful thanks to his Lordship, the Earl of Aberdeen, for the favour and most essential service he has conferred upon me.

"I shall now attempt to give you a brief idea of what I have done in this singular, and in some parts, interesting country. On the 13th of September, I landed in Cobija, the only commercial port which the Republic possesses, and during the few days I remained there, I made an excursion up the dry, lofty and arid mountains which run parallel with the coast nearly the whole length of the Desert of Atacama. Along the coast, and at the base of those mountains scarcely a plant exists: it is not possible for a person, who has not seen this place, to picture to them-feet, to my great surprise I discovered a variety of plants, and amongst them growing on some stunted bushes a beautiful new species of *Tropæolum*, somewhat similar to *T. brachyceras*, but with a more expanded flower, twice the size, and the plant altogether much more robust. I obtained fine tubers and specimens of this plant, but, from what I learn, they have been unfortunately lost on their passage to Valparaiso.

"Having procured mules in Cobija for myself and two Chilian servants, we took the road to Potosi, and in three days reached the little town of Calama, forty leagues distant from Cobija, situated in the desert of Atacama. It was within thirteen leagues of this place, that I had the pleasure of finding in February the beautiful *Pilocereus*. In my last letter from Valparaiso, I gave you a few remarks on this interesting plant; since then I have seen more of its habits, &c., therefore shall again trouble you with the following observations. It is generally found on the slopes of bold, rugged mountains, whose aspect is towards the north, where it enjoys plenty of sun and a dry sandy soil. Frequently twenty or thirty stems proceed from the same root, the outer ones partly lying on the ground forming a curve upwards, the inner stems grow erect and are those which are most hairy, they seldom reach the height of 4 feet, and from the older stems in the centre spring the flowers, which are of a beautiful dark red, about the size of *C. flagelliformis*; the seed-vessels are round or rather oval, smooth and shining on the surface, hollow within and destitute of a pulpy substance; the seeds are round and of a blackish colour. The place where I found it most abundantly, was near the vicinity of the city of Potosi at an elevation of 12,000 feet; therefore you may judge from this it is frequently exposed to frost. In the language of the Quichuan Indians, it is called Quchuallo, pronounce Ke-wal-yo. The other enormous species of *Cereus*, which I mentioned, grows in the same localities and often attains the height of 20 feet. The flowers proceed from the top, and are of a dark red colour arranged in a circle; when viewed from a distance, one might imagine that a flower of a *Pæonia* had been artificially placed on the plant. The stems are often 18 inches in diameter; the natives use the dried stems for rafters to their houses, also for doors, being the only timber the country produces in those parts. I possess, in Valparaiso, a piece of this wood, which on my return I will forward, for the purpose of giving you an idea of its size and structure.

"From Calama, by regular stages, I arrived at Potosi, one hundred and fifty-eight leagues from Cobija. We travelled on the summit of the Andes after leaving Calama, twenty leagues, often at an elevation of 13,000 feet, till we reached Potosi. During the whole of this long journey, I did not collect a single specimen, as few plants exist, and those we saw were not in flower, it then being the dry season; were a traveller to pass the same road at the present time, he would be more fortunate, and might obtain many curious alpine plants. On the Andes, I found many interesting birds, particularly two kinds, one a new species of *Eudromia*, as large as *E. elegans*, but different in plumage, and without a crest; the other is a charming species of *Tinochorus*, much larger than *T. D'Orbignianus* and of beautiful plumage. These birds inhabit the vicinity of frozen brooks near Tapaquilcha; they are rare and I have never shape of *Gloxinia speciosa.* I verily believe, on many trees, there were at least 10,000 flowers. I have preserved numerous specimens of this fine plant, accompanied with the seed-vessels; therefore you will, when you receive them, soon find the genus to which it belongs. On the banks of the river under the shade of trees, I met with a few plants of a *Gesnera* new to me, having a large tuberous root and pale red flowers. The commonest tree in the neighbourhood of Chuquisaca is the *Schinus Molle,* which grows to a large size, and is highly ornamental, when its long racemes of pink fruit are ripe. On the large trees we saw many parasitical species of *Tillandsia,* and a few species of *Orchidaceæ,* but not in flower. The *Cacteæ* are very numerous in this part of the country, and I collected about twelve species of *Cereus* and *Echinocactus,* many with very fine flowers, and all different from those of Chile. I have forwarded plants to Valparaiso, and by the time you receive this, I hope they may have arrived in England. From the nature of some of them, I am apprehensive they will not endure the long voyage to Europe.

"After a month's residence in Chuquisaca and its environs, I came on to Cochabamba, through the warm and unhealthy valleys of Moxotoro, Rio Grande and Misque, where I found a variety of plants, birds, &c., and I arrived here on the 24th of December. I have now spent three months in this place, which is the most delightful climate I ever experienced, the thermometer ranging from 68° to 74° in the shade.

"During my residence here, I have examined the mountains in the vicinity, and have made a considerable collection of dried plants, too numerous to mention. Among them are four species of *Calceolaria,* distinct from those of Chile, several *Salvias* and many genera new to me. One of the handsomest plants I have seen here, is a species of *Begonia,* with a large tuberous root and a fine red flower, 3 inches in diameter. I have sent tubers of this to Chile with directions for England. The leaves are large and shining, and the plant attains about 2 feet; it grows in a rich decomposed vegetable soil, on the shelves of precipices in shady places on the mountains to the N.E. of Cochabamba.

"I consider my next remittance of dried plants from this country will afford you more pleasure and interest than any you have received from me, both as to extent and variety, and it also may prove more novel, from the few travellers that have yet entered this remote country. I have devoted the greater part of the time I have spent here to ornithology and entomology. Of birds, I possess at least 100 species; many of them were made known to Europe, only by the labours of that eminent traveller, D'Orbigny. The following birds discovered by him, I have found in the valleys of Chuquisaca and Cochabamba; (the names extracted from his work); viz: *Troglodytes fulvus*, *Saltator aurantirostris*, *Hirundinea bellicosa*, *Adacyani rostris*, *A. nigerrima*, *Pytilus aureo-ventris*, *Cypselus Andicolus*, *Emberiza luteocephala*, *E. hypochondria*, *E. griseo-cristata*, *E. atriceps*, *Linaria analis*, *Carduelis atratus*, *Icterus maxillaris*, *Uppucerthia Andicola* and *montana*, *Phytotoma angustirostris*, *Synallaxis humicola*, *S. fuliginiceps?* *S. striaticeps*, *S. torquata*, *Orpheus dorsalis*, *Turdus fusco-ater*, *T. Chiguanco*, *Phalcolænus montanus*, *Picus atriventris*, *P. cactorum*, *Colaptes rupicola*, *Culicivora reguloides*, *Setophaga brunniceps?* *Serrirostrum carbonarium*, *S. psittoides*, and *Anthus furcatus*. In Entomo-

After I leave Moxos, I shall ascend the River Piray, and land within a few leagues of Santa Cruz de la Sierra, and thence return again to Cochabamba. Should I only have health during this journey, I shall, without doubt, form an extensive collection of Natural History, which may tend to make known the Bolivian Flora in England; better, at least, than it is understood at the present day. It is not possible for you to form any conception of the expense and difficulty of conveying things after being collected, in this country, without roads and the means of transportation. Soon after my arrival in Trinidad, I will do myself the pleasure of writing to you again, and am,

Sir William,
" Your obedient and obliged servant,
"Thomas Bridges."

Notes on Mimoseæ, *with a Synopsis of Species. By* George Bentham, Esq.

Tribe III. Acacieæ.

(*Continued from* Vol. III. p. 226.)

(*Foliis simpliciter pinnatis.*)

XXVIII. Inga, *Martius.—Ingæ foliis simpliciter pinnatis, Willd., DC.*

Flores hermaphroditi, rarius polygami. Calyx tubulosus v. campanulatus, 2-5-dentatus. Corolla tubulosa v. infundibuliformis. Stamina indefinita, sæpius numerosa, corolla duplo v. pluries longiora, basi in tubum coalita. Ovarium unicum. Legumen carnosum v. coriaceum, planum tetragonum v. subteres, rectum v. subincurvum, vix dehiscens, marginibus incrassatis v. valde dilatatis et sulcatis. Semina pulpa dulci, sæpe nivea, involuta.—Frutices v. arbores Americæ calidioris, inermes. Folia simpliciter abrupte pinnata. Petiolus inter juga foliolorum sæpe in alam expansus, alis semper ad nodos interruptis. Glandulæ inter omnia paria scutellatæ, turbinatæ vel stipitatæ, in speciebus perpaucis obsoletæ v plane nullæ. Foliola omnia opposita, paucijuga, majuscula nunc maxima (rarissime infra pollicem longa, interdum ultrapedalia) ex oblongo v. lanceolato ovata. Flores in umbellas, capitula v. spicas oblongas v. rarius elongatas dispositi. Spicæ solitarie v. sæpius fasciculatim pedunculatæ, axillares v. ad apices ramulorum foliis abortientibus paniculatæ. Flores sæpissime albi.

As already stated under *Pithecolobium*, the absolute character here relied on for distinguishing *Inga* is the simply pinnate, not bipinnate leaves. The generality of the species differ, it is true, essentially from *Pithecolobium* in the thicker, more fleshy, almost indehiscent pod, with a remarkably thickened or dilated margin, and never spirally twisted, and the flowers are usually longer with a hairy corolla, but many species have precisely the flower of *Pithecolobium*, and even the differences in the pod run from one genus to the other by almost inappreciable gradations, so that unless the positive (and in Leguminosæ important) character derived from the foliage be taken into account, we must either reunite all the monadelphous Mimoseæ into one genus, or have recourse to vague characters, difficult to appreciate, and still more so to describe, and after all remain in doubt as to all species where the pod is undescribed—that is, more than one third of the whole number known.

losa, Legumen planum marginibus incrassatis quam facies multo angustioribus.—Species 37-86.

V. EUINGA. Spicæ ovatæ v. oblongæ. Calyx tubulosus v. tubuloso-campanulatus. Corolla villosa. Leguminis margines valde dilatati, sulcati, quam facies vix angustiores v. latiores easque interdum obtegentes.—Species 87-128.

The difficulty in determining the species, especially of the two last sections, is unusually great, the foliage and flowers of half-a-dozen or more species are often so similar as to render it almost impossible to characterize them without the pod, which very seldom accompanies the specimens. The characters derived from the proportionate length of the calyx, corolla and staminal tube vary, even after the flower is expanded, according to the period of its development; the inflorescence, whether chiefly axillary or terminal, can scarcely be judged of from the fragments which our herbaria will hold of these large-leaved trees; the number and size of the leaflets depend often on the part of the branch whence the specimen is taken; and the hairiness is often very abundant on the young leaves and branches, and entirely worn off with time. It is, therefore, very probable that many of the species here described as new, may hereafter be found to be the same as some of those already described which I have not seen. On the other hand, it may be observed that the species of Inga do not in general appear to be very widely diffused, and that most of Willdenow's, and others which are unknown to me, come from Para or Caraccas, from neither of which localities I have any specimens.

Sect. I. LEPTINGA. Racemi umbellæformes, receptaculo subgloboso, pedicellis elongatis, calyce sæpius multo longioribus, rarius calyce ampliore brevioribus. Flores parvi, glabri v. tenuiter puberuli.

1. I. *myriantha*, (Pœpp.! et Endl. Nov. Gen. et Sp. 3, p. 77, t. 289) ramulis inflorescentiaque tomentellis, foliis glabris, petiolo alato, glandulis magnis, foliolis bijugis elliptico-oblongis acuminatis coriaceis nitidis, umbellis pedunculatis subracemosis, floribus tomentellis, calyce corolla duplo quam

pedicellus plus duplo breviore, tubo stamineo vix exserto.—Foliola majora 4-5-pollicaria. Petioli alæ latiusculæ. Pedunculi 1-1½-pollicares. Bracteolæ subulatæ. Flores 4-5 lin. longi.—British Guiana, *Schomburgk*, coll. 1843, n. 751 (1400); Woods of the province of Maynas, *Pœppig*; Lamas in Peru, *Mathews*, n. 1593.

2. I. *umbratica* (Pœpp.! et Endl. l. c. p. 77) ramulis inflorescentia foliisque junioribus tomentoso-puberulis, petiolo interrupte alato, foliolis bijugis amplis ovali-oblongis ellipticisve coriaceis, glandulis magnis, umbellis brevissime pedunculatis, floribus tomentellis, calyce corolla plus duplo quam pedicellus pluries breviore, tubo stamineo longe exserto, legumine recto plano glabro.—I. *myrianthæ* affinis, sed characteribus datis facile distincta. Foliola majora 8 poll. longa.—Woods of the province of Maynas, *Pœppig*.

3. I. *sciadion* (Steud.! Flora, 1843, p. 758) ramulis foliisque glabris, petiolo complete alato, glandulis majusculis, foliolis bijugis ovatis v. ovali-oblongis breviter acuminatis coriaceis nitidis, umbellis brevissime pedunculatis, floribus tomentellis, calyce corolla pedicelloque plus duplo breviore, tubo stamineo breviter exserto.—Ab I. *umbratica* differt imprimis foliolis triplo minoribus, petioli alis ad foliola inferiora attingentibus, et staminum tubo breviore.—Surinam, *Hostmann*, n. 170.

4. I. *brevipes* (Benth. in Hook. Journ. Bot. 2. p. 144)

pulæ lanceolato-falcatæ vel oblongæ. Pedicelli capillares, 9 lin. longi. Corollæ 5 lin. longæ. Leguminis margines elevati. —On the Amazon river, *Pœppig;* Lamas, in Peru, *Mathews.*

6. I. *sertulifera,* (DC. Prod. 2, p. 436), ramulis petiolis pedunculisque ferrugineo-tomentellis, petiolo sub foliolis brevissime alato v. nudo, glandulis parvis, foliolis sub-bijugis ovatis v. ovato-oblongis coriaceis nitidis glabris, umbellis pedunculatis, floribus glabriusculis, calyce corolla pedicelloque 3-4-plo breviore, tubo stamineo subexserto, legumine crasso compresso leviter marginato glabro.—Mimosa coriacea, *Pers. Syn.* 2, p. 262.—Inga coriacea, *Desv. Journ. Bot.* 1814, 1, p. 71.—Foliola ultima 4-5 poll. longa, 1½-2 poll. lata. Stipulæ falcato-oblongæ v. lineares. Pedunculi 1½-2-pollicares. Bracteolæ parvæ. Calyx 1 lin. corolla fere 4 lin. longa. Tota siccitate sæpius nigrescit.—British Guiana, *Parker;* French Guiana, *Leprieur;* Surinam, *Hostmann,* n. 237.

β? minor, glabra, foliolis ultimis 3-4-pollicaribus vix coriaceis, pedunculis brevioribus, calycibus minoribus; an species propria?—British Guiana, *Schomburgk, 2nd Coll.* n. 810, (1427.)

7. I. *umbellifera* (Steud.—DC. Prod. 2, p. 432), ramulis inflorescentiaque tomentellis, petiolo breviter et anguste alato, glandulis scutellatis, foliolis bijugis oblongo-lanceolatis utrinque angustatis coriaceis nitidis, umbellis longe pedunculatis, floribus subglabris, calycibus corolla pedicelloque plus quadruplo brevioribus, legumine plano marginato minute tomentello.—Mimosa umbellifera, *Vahl. Ecl. Amer.* 3, p. 30.—Foliola multo angustiora quam in I. *sertulifera,* ultima 3-3½-pollicaria; petiolus evidentius alatus; pedunculi longiores; flores consimiles.—British Guiana, *Schomburgk.*

8. I. *virgultosa* (Desv. Ann. Sc. Nat. Ser. 1, v. 9, p. 426), ramulis apice tomentosis, petiolo anguste alato, glandulis minutis, foliolis 3-4-jugis (parvis) ovato-lanceolatis glabris nitidis, umbellis pedunculatis, calyce minuto corolla pedicelloque multoties breviore, tubo stamineo longiuscule exserto, legumine crasso compresso.—Mimosa virgultosa, *Vahl. Ecl.* 3, p. 32.—From the description, it appears that this species

(which I have not seen) is very near to I. *heterophylla*, if not a mere variety with downy branches. The leaflets are said to be from 1 to 1½ inches long. The calyx, well described by Vahl, is so small that Desvaux could not see it.—Cayenne.

9. I. *heterophylla* (Willd. Spec. 4, p. 1020), glaberrima, petiolo nudo v. anguste marginato, glandulis stipitatis parvis, foliolis (parvis) 1-4-jugis oblongis v. ovato-oblongis acuminatis nitidis, umbellis breviter pedunculatis, floribus glaberrimis tenuibus, calyce campanulato corolla pedicelloque multoties breviore, tubo stamineo longiuscule exserto.—I. protracta, *Steud. Flora*, 1843, p. 758.—Foliola vulgo bijuga, majora 1-2 poll. longa, pleraque tamen multo minora. Glandulæ adsunt etiam in speciminibus Hostmannianis. — British Guiana, *Parker*; Surinam, *Hostmann*, n. 1194.

10. I. *graciliflora*, glabriuscula, petiolo nudo, glandulis sessilibus sæpe obscuris, foliolis trijugis amplis oblongo-ellipticis utrinque acutis subtus ad costam puberulis membranaceis, umbellis in ramis annotinis fasciculatis brevissime pedunculatis, calyce minuto quam corolla gracilis v. pedicellus pluries breviore, tubo stamineo longe exserto.—Foliola majora semipedalia. Petioles teres v. vix angulatus. Corolla fere 3 lin. longa, tubo gracillimo, fauce campanulata, tubus staminens tenuis corolla fere duplo longior.—British Guiana,

12. I. *quaternata* (Pœpp. et Endl. Nov. Gen. et Sp. 3, p. 79), ramulis petiolis foliisque glabris, petiolo nudo, glandulis perparvis v. nullis, foliolis 4-jugis membranaceis obovato-oblongis acute acuminatis basi cuneatis, pedunculis fasciculato-quaternis in paniculum terminalem pubescentem dispositis, floribus subracemoso-umbellatis, calyce hispido pubescente, corolla sericea, staminum tubo incluso.—Foliola terminalia 9 poll. longa, 3½ poll. lata. Panicula pedalis, aphylla. Bracteæ minutæ. Pedicelli 3 lin. longi. Corolla pube sericea nitens, calyce infundibuliformi duplo longior.—Woods of Ega, in North Brasil, *Pœppig*. Unknown to me.

13. I. *Sellowiana*, glabra, petiolo anguste alato, stipulis lineari-falcatis, glandulis parvis, foliolis 2-3-jugis oblongis v. oblongo-lanceolatis utrinque angustatis coriaceis nitidis, umbellis pedunculatis, floribus tubulosis glabris, calyce campanulato parvo corolla quadruplo quam pedicellus 2-3-plo breviore, tubo stamineo exserto.—A præcedentibus differt imprimis pedicellis brevibus raro 2 lin. longis. Stipulæ acutissimæ, sæpe persistentes. Foliola ultima 2-2½-pollicaria. Pedunculi tenues. Bracteolæ minutæ. Calyx vix semilinea longior. Corolla 2½-3 lin. longus.—Brasil, *Sello*.

14. I. *cordistipula* (Mart. Herb. Fl. Bras. p. 111), glabra, petiolo anguste alato v. rarius subnudo, glandulis parvis v. nullis, stipulis late et oblique ovatis, foliolis 1-3-jugis oblongis v. oblongo-lanceolatis utrinque angustatis nitidis, umbellis pedunculatis, calyce campanulato quam corolla vix duplo breviore pedicellum vix æquante, legumine crassiusculo glabro leviter marginato.—Mimosa plana, *Vell. Fl. Flum.* 11, t. 10.—Species stipulis, bracteis et calyce facile distincta. Foliola ultima 3-pollicaria. Petioli alæ nunc utrinque fere lineam latæ, nunc evanescentes. Pedicelli 1-3 lin. longi. Bracteæ obovato-spathulatæ. Calyx laxus, glaberrimus, striatus, basi attenuatus, 3-3½ lin. longus. —Tropical Brasil, *Pohl*, *Sello*, *Boaz*; Rio Janeiro, *Lushnath*; also distributed by *Martius*, in some sets at least, under n. 154.

Sect. II. Diadema. Flores in capitulo globoso longe pedunculato sessiles v. rarius breviter pedicellati, parvi, tenues, glabri. Petioli nudi v. rarius angustissime marginati. Glandulæ parvæ v. obsoletæ.

15. I. *nutans* (Mart. Herb. Fl. Bras. p. 114), glabra, foliolis 4-5-jugis ovato-oblongis utrinque angustatis obtusis sæpius mucronulatis, pedunculo longo tenui, pedicellis calyce campanulato parvo subbrevioribus, corolla calyce multoties longiore, tubo stamineo longiuscule exserto.—Mimosa nutans, *Vell. Fl. Flum.* 11, t. 44.—Foliola majora 1½-pollicaria, pleraque multo minora. Pedunculi filiformes, bipollicares. Pedicelli et calyces vix semilinea longiores. Corolla 3-linearis.—Brasil, *Pohl.*

β tenuis, foliolis minoribus 5-6-jugis.—Mimosa tenuis, *Vell. Fl. Flum.* 11, t. 11.—Inga tenuis, *Mart. Herb. Fl. Bras.* p. 114.—Rio Janeiro, *Lushnath*, *Reidel.*

16. I. *diadema* (Mart. Herb. Fl. Bras. p. 114), foliolis 4-5-jugis elliptico-oblongis utrinque angustatis, pedunculo longo tenui, floribus sessilibus?—Mimosa diadema *Vell. Fl. Flum.* 11, t. 45—Brasil. This I have not seen, but from Velloso's figure it appears to be near I. nutans on a large scale, the leaflets are three or four inches long, the peduncles 7 to 8 inches. In the figures of both species, the artist has found it too much trouble to distinguish the calyx corolla and stamens.

19. I. *rufescens*, ramis petiolis pedunculisque ferrugineo-villosis, foliolis 4-5-jugis obovali-oblongis basi oblique subcordatis membranaceis pubescentibus supra vix demum glabratis, pedunculis folio brevioribus, floribus sessilibus.—Ab I. *tubulifera* differt pube copiosiore longiore, foliolis paucioribus tenuioribus, ultimis 2-3 poll. longis, 12-15 lin. latis, rete venarum supra conspicua. Pedunculi tenuiores. Bracteolæ setaceæ, longiores.—In an island off the coast of Veragua, *Hinds*. The flowers in the specimen are not yet open.

20. I. *globulifera*, ramulis petiolis pedunculis costisque foliorum ferrugineo-tomentellis, foliolis sub-4-jugis obovali- v. oblongo-ellipticis basi breviter cuneatis, pedunculis elongatis, floribus sessilibus, corolla tenuissima calyce puberulo plus triplo longore.—Species affinis *Ingæ Jinicuil*, sed foliola minora, tenuiora, subtus ad venas pube minuta tomentella nec glabra. Bracteæ subulatæ. Flores tenuissimi, 3½ lin. longi. Calyx 1 lin. longus, tubulosus, apice puberulus.—Coast of Veragua, *Barclay*.

81. I. *Jinicuil* (Schlecht.! Linnæn, 12, p. 559), glabra, foliolis trijugis ovali- v. oblongo-ellipticis breviter cuneatis apice acutiusculis nitidulis, pedunculis elongatis, corolla calyce puberulo triplo longiore, legumine plano glabro. — Foliola majora 4-6 poll. longa. Pedunculi 1-3-pollicares. Calyx 1 lin., corolla 3 lin. longa.—Jalapa, *Schiede*. Of this I have not seen the flowers myself.

22. I. *Billbergiana*, ramulis petiolis pedunculis costisque foliolorum ferrugineo-pubescentibus, foliolis bijugis ovali-ellipticis basi breviter cuneatis supra nitidulis, pedunculis elongatis, floribus sessilibus.—Affinis I. *Jinicuil*, pubes I. *globuliferæ*, sed foliola semper bijuga videntur. Capitula et bracteæ præcedentium.—Porto Bello, *Billberg*. The flowers are not yet open in the only specimen I have seen.

Sect. III. BURGONIA. Spicæ cylindricæ. Flores parvi, numerosi, glabri v. pilis brevissimis leviter puberuli. Calyx campanulatus, corolla pluries brevior.—Petioli nudi v. sæpius anguste alati. Glandulæ sessiles, scutellatæ v. pezizæformes.

Spicæ vulgo axillares, solitariæ v. fasciculatæ, breviter pedunculatæ, 1-3-pollicares. Flores sessiles, vix unquam tres lineas superant. Bracteæ minutæ.

23. I. *tetraphylla* (Mart.! Herb. Fl. Bras. p. 112), glabra v. ramulis rarius puberulis, petiolo nudo v. angustissime marginato, foliolis bijugis ovatis v. ovato-oblongis obtuse acuminatis coriaceis nitidis, spicis elongatis, calyce corolla 2-3-plo breviore, tubo stamineo longiuscule exserto, legumine plano glabro.—Mimosa tetraphylla *Vell. Fl. Flum.* 11, t. 8.—Arbor parva. Foliola 3, rarius 4 poll. longa, 1½-2 poll. lata. Corollæ 2½ lin. longæ, tubo brevi, fauce campanulata 4-5-loba. Staminum tubus corolla fere duplo longior, quo charactere et corolla latiore hæc species præcipue differt ab I. *laurina*.—Tropical Brasil near Bahia, *Salzmann*, *Lushnath*, *Blanchet*, n. 1832, *Martius*, *herb. Bras.* n. 1094, on the Rio S. Francisco, *Claussen*, near Crato, *Gardner*, n. 1583.

β. parvifolia, arbor elata.—Pernambuco, *Gardner*, n. 984.

24. I. *Guayaquilensis* (G. Don, Gen. Syst. 2, p. 391).—This is considered by Walpers (Linnæa 14, p. 298), to be the same as the Brasilian I. *tetraphylla*, and if that be the case, Don's name claims the priority; but without a careful comparison of specimens, it is scarcely advisable to unite two species from countries so widely distant as Guayaquil and

2-3-jugis anguste oblongis utrinque angustatis, spicis elongatis, calyce corolla quadruplo breviore, tubo stamineo longiuscule exserto, legumine plano glabro.—Mimosa cylindrica, *Vell. Fl. Flum.* 11, t. 9.—Valde affinis I. *semialatæ* et forte ejus varietas; petiolus tamen rarissime subalatus et tubus stamineus longior. Foliola sæpe trijuga.—Tropical Brasil, *Pohl*, *Boaz*.

27. I. *coruscans* (Humb. et Bonpl. in Willd. Spec. 4, p. 1017), glabra, petiolo nudo, foliolis trijugis oblongis utrinque angustatis coriaceis nitidis, spicis elongatis, calyce corolla pluries breviore, tubo stamineo vix exserto.—Ab I. *cylindrica* differt foliolis majoribus latioribus coriaceis; flores etiam tenuiores confertiores, calyx minor, staminum tubus multo brevior.—On the Magdalena river, *Humboldt and Bonpland;* British Guiana, *Schomburgk, 2nd Coll. n.* 72 *and* 214.

28. I. *pezizifera*, ramulis novellis inflorescentiaque tomentellis, foliis glabris, petiolo nudo, glandulis maximis peziziformibus, foliolis 4-jugis ovato-oblongis acuminatis coriaceis nitidis, spicis oblongo-cylindricis, calycibus corolla 4-plo brevioribus, tubo stamineo exserto—Foliola 3-4-pollicaria. Inflorescentia et flores I. *Bourgoni*. Species inter Burgoniis apteris facile distinguitur glandulis maximis.—British Guiana, *Schomburgk, 2nd. Coll. n.* 124 (50).

29. I. *polystachya*, glabra v. ramulis inflorescentiaque tomentoso-puberulis, petiolo nudo, floribus quadri-rarius tri-jugis ovato-oblongis obtusis v. obtuse acuminatis coriaceis nitidis, spicis numerosis elongatis multifloris, calyce corolla subtriplo breviore, tubo stamineo subexserto.—Foliola fere I. *tetraphyllæ* sed fere semper 4-juga. Spicæ 3-4-pollicares, floribundæ. Flores quam in affinibus minores; corolla vix unquam 2 lin. longa.—Tropical Brasil, *Pohl*.

30. I. *tenuifolia*, glabra, petiolo nudo, foliolis 4-jugis lanceolatis acutis basi angustatis, spicis cylindricis, calyce corolla triplo breviore, tubo stamineo incluso.—Foliola membranacea, majora 1½-2-poll. longa, 5-6 lin. lata. Spicæ fere

I. Bourgoni sed longius pedunculatæ. Corolla vix 2 lin. longa.—Brasil, at Gongo-soco, *Riedel.*

31. I. *marginata* (Willd. Spec. 4. p. 1015), ramis foliisque glabris, petiolo sub foliis anguste et longiuscule alato, foliolis bijugis elliptico-oblongis acuminatis nitidis, spicis elongatis laxis, calyce corolla pluries breviore, tubo stamineo subexserto, "legumine lineari nodoso."—Mimosa fagifolia *Linn. Spec.* p. 1498.—Foliola suprema 3-4-pollicaria. Spicæ tripollicares. Bracteæ minutæ, ovatæ, cuspidatæ.—Caraccas, *Bredemeyer,* British Guiana, *Schomburgk, 2nd. Coll. n.* 918 (1443).—The consistence of the leaves and inflorescence of this plant bring it much nearer to I. *laurina* than to I. *Bourgoni* to which it is usually referred, it is also near I. *semialata*; but the wings of the petiole are longer and narrower, the leaves shorter and firmer, the bracts shorter and broader, and the pod (which I have not seen) is very differently described. Kunth's I. *marginata,* considered by De Candolle as distinct, is said by others to be the true I. *marginata, Willd.,* but as neither flowers nor fruit have been seen, it cannot at any rate be admitted as a separate species.

32. I. *Burgoni* (DC. Prod. 2 p. 434), ramis foliisque glabris, petiolo sub foliis breviter alato, foliolis 2-3-jugis ovali-oblongis acuminatis nitidis, spicis oblongo-cylindricis

v. ramulis foliisque junioribus leviter pubescentibus, petiolo sub foliolis superioribus alato, foliolis bijugis rarius trijugis anguste oblongis utrinque angustatis membranaceis, spicis elongatis, calyce corolla 3-4-plo breviore, tubo stamineo breviter exserto, legumine plano glabro.—Mimosa semialata, *Vell. Fl. Flum.* 11, t. 5.—Foliola adulta 3-4-poll. longa, 10-15 lin. lata. Ala sub pari superiore nunc brevis nunc ad par infimum attingens, angusta v. latiuscula. Spicæ interruptæ. Bracteæ lanceolato-setaceæ, deciduæ. Calyx pilis paucis hirtellus. Corolla 2 lin. v. rarius 2¼ lin. longa.—Provinces of Rio Janeiro and Minas Geraes, *Riedel*, *Miers*, *Martius*, *n.* 152, *Vauthier*, *n.* 87, *Gardner*, *n.* 365, *Sello*, *Pohl*, &c.; South Brasil, *Tweedie*.

β. latifolia (Mart.! Herb. Fl. Bras. n. 1091), foliolis adultis 6-8 poll. longis, 2-2½ poll. latis, corollis 3 lin. longis. —Tropical Brazil, *Sello*, *Pohl*, *Martius*.

34. I. *excelsa* (Pœpp.! et Endl. Nov. Gen. et Sp. 3. p. 78), foliis glabris, petiolo sub foliolis superioribus breviter alato, foliolis bijugis oblongis utrinque angustatis, spicis elongatis, calyce corolla triplo breviore, tubo stamineo incluso "legumine tereti toruloso glabro."—Simillima I. semialatæ, differt staminibus et ex auctoribus legumine quodipse non vidi.—Peru under the Andes, *Pœppig*; at Casapi, *Matthews*, *n.* 1922.

35. I. *puberula*, ramulis pedunculis foliisque junioribus hirto-puberulis, petiolo sub foliolis superioribus anguste alato, foliolis bijugis oblongis utrinque angustatis, spicis elongatis laxis, calyce corolla triplo breviore, tubo stamineo incluso v. breviter exserto; "legumine moniliformi."—Inter I. *excelsa*, et I. *pycnostachya* media, a priore differt pube, ab hac ala petioli angustiore breviore nunc angustissima, spica laxiore, etc. An varietas I. *semialatæ*? sed legumen (quod ipse non vidi) diversum dicitur.—Tropical Brasil, *Pohl*, *Guillemin*; near Bahia, *Lushnath*.

36. I. *pycnostachya*, ramulis petiolisque pilosulis, petiolo alato, foliolis bijugis anguste oblongis longe et obtuse acuminatis basi angustatis utrinque pilosulis, spicis elongatis

densis, floribus minute pilosiusculis, calyce campanulato corolla 4-plo breviore, tubo stamineo vix exserto.—Arbor habitu et inflorescentia I. *excelsæ* et I. *puberulæ* similis sed flores confertiores et ala petioli ad foliola inferiora attingit et superne utrinque 1-2 lin. lata est. Corolla 2 lin. longa. Legumen ignotum.—Province of Mozobamba, Peru, *Mathews*.

The I. *martinicensis*, Presl. inserted below n. 47 may possibly belong to the section Bourgonia.

Sect. IV. PSEUDINGA. Spicæ ovatæ densæ v. longiores basi laxæ v. interruptæ. Flores sessiles v. rarius brevissime pedicellati. Calyx tubulosus v. anguste tubuloso-campanulatus. Corolla speciebus paucis exceptis, villosa. Legumen planum, marginibus elevatis latitudine leguminis multo angustioribus.—This section is readily distinguished from the preceding ones by the inflorescence, from Euinga it is scarcely known but by the pod. The flowers are usually more slender, the calyx smooth or clothed with appressed hairs, the corolla generally very hairy, but in the Glabrifloræ quite smooth, sometimes as small as in the preceding sections, sometimes two or three times as long, the petiole often without wings, but sometimes as broadly winged as in Euinga. As there are so many species of which the pod is unknown, the limits between this section and Euinga cannot be as yet very precisely defined, and it is very likely that

lata. Spicam unicam vidi brevem paucifloram. Flores fere Sect. Bourgoniæ, tenues, 3 lin. longæ. Calyx tubulosus, lineam longus, tenuissime pubescens. Tota planta cæterum glaberrima.—British Guiana, *Schomburgk*, *1st. Coll. n.* 595.

38. I. *sapindoides*, (Willd. Spec. 4. p. 1012), ramulis hirtis, petiolo inter paria lineari-alato basi nudo, foliolis 4-5-jugis oblongis acuminatis supra nitidis subtus scabriusculis, spicis oblongis brevibus pedunculatis, legumine lineari glabro.—Foliola superiora 4-pollicaria. Legumen pedale.—Caraccas, *Bredemeyer*. Unknown to me.

**Petiolo nudo, glandulis sæpius obscuris v. plane nullis.*

39. I. *albicans* (Walp. Linnæa, 14 p. 298), glaberrima, foliolis bijugis ovato-oblongis utrinque acuminatis coriaceis nitidis, glandulis parvis vel obscuris, stipulis lineari-v. lanceolato-falcatis, pedunculis rhachi sublongioribus, spicis ovatis densis v. longioribus interruptis, calyce tubuloso corollæ dimidium æquante.—I. calycina *Salzm.! Pl. exs.*—I. peduncularis, *Mart.! Herb. Fl. Bras.* n. 1095.—Foliola ultima 3-4-pollicaria v. in speciminibus vegetioribus interdum semipedalia. Pedunculi erecti, 2-3-pollicares. Bracteolæ parvæ. Flores albi, in sicco nigricantes, 6 lin. longi. Calyx nunc ad medium, nunc ad duas tertias corollæ attingens, striatus, uti in plerisque Pseudingis et nonnullis Euingis sæpe irregulariter fissus. Stamina sesquipollicaria.—Tropical Brasil, *Pohl*, *Sello*; near Bahia *Martius*, *Salzmann*, *Lushnath*; Surinam, *Hostmann*, n. 258.

40. I. *unijuga* (Pœpp. et Endl. Nov. Gen. et Sp. 3. p. 79), glaberrima, eglandulosa, foliolis unijugis oblongis basi valde inæquali et obliqua acutis subcoriaceis venoso-marginatis, pedunculis petiolo æqualibus paucifloris, floribus glabris, leguminibus falcatis pubescentibus.—Arbor excelsa. Foliola adulta 10 poll. longa, 4 poll. lata. Pedunculi fasciculati, 2 lin. longi. Legumen 5 poll. longum, compressum, falcatum, suturis tumidis, valvis coriaceis pubescentibus.—Woods about Ega on the Amazon river, *Pœppig*. This species, which I have not seen, is evidently very diffe-

rent from any one known to me. In some respects it appears allied to the *Pithecolobium unifoliolatum*, in which the leaves at first sight appear to be simply pinnate with two leaflets, although they are in fact bipinnate with two pinnæ and one leaflet to each.

41. I. *hymenæoides* (Desv. Journ. Bot. 1814. 1. p. 70), foliolis 1-2-jugis ovatis basi obliquis nitidis, petiolis eglandulosis, ramis pedunculis floribusque glabris, capitulis axillaribus pedunculatis, leguminibus oblongis obtusis rectis basi attenuatis margine incrassatis. — Foliola subcoriacea, 1½ poll. longa, pollicem lata. Legumina bipollicaria.—Cayenne. Unknown to me.

42. I. *capitata* (Desv. Journ. Bot. 1814. 1. p. 71), foliolis bijugis ovatis subacuminatis nitentibus, petiolis ramis pedunculis floribusque glaberrimis, spicis 2-3 axillaribus ovato-oblongis pedunculatis.—Rami verrucosi teretes. Calyces tubulosi, 2 lin. longi.—Cayenne. Unknown to me.

43. I. *lentiscifolia*, glabra, petiolis obscure marginatis nudisve, glandulis nullis, foliolis 2-3-jugis oblongo-lanceolatis obtusis retusisve coriaceis supra nitidis, pedunculis petiolo longioribus erectis, capitulis ovato-globosis densis, floribus tubulosis, calyce quam dimidium corollæ breviore.—Rami rigidi, apice ramosissimi, foliosi, fastigiato-floribundi. Foliola maiora 1½ poll. longa, 5 lin. lata. Pedunculi rigidi, 1½-2-

bina superiora, spicis oblongis breviter pedunculatis, calycibus corollisque glabris.—Foliola superiora 4 poll. longa, 1½ poll. lata, inferiora 3-2-pollicaria. Glandulæ ad paria 2 inferiora nullæ.—On the Orenoco, *Humboldt* and *Bonpland*. I am unacquainted with any species with glands between the upper leaflets only.

46. I. *fraxinea* (Willd. Spec. 4, p. 1019), foliolis 5-jugis oblongis acuminatis utrinque glabris nitidis, glandulis urceolatis sessilibus, petiolo pubescente, spicis paniculatis oblongis pedunculatis, calycibus pubescentibus, corolla glabra.—Foliola superiora 3-pollicaria, costæ pubescentes. Spicæ unguiculares.—Para, *Hoffmansegg*. Unknown to me.

§ 2. *Gymnopodæ*. Petiolus apterus. Glandulæ scutellatæ, sessiles (v. rarissime nullæ?). Spicæ ovatæ, rarius oblongæ. Bracteæ calyce multo breviores, sæpius minutæ v. caducissimæ. Calyx tubulosus, pubescens (v. in I. *leiocalycina* glaber). Corolla sericeo-pubescens v. villosa. Folia glabra v. pube minutissime ferrugineo-tomentella (v. in I. *martinicensis* et I. *vismiæfolia* speciebus affinitate dubiis velutino-villosa). Pedunculi in plerisque speciebus fasciculati, superiores fastigiatim v. corymboso-paniculati, rarius omnes axillares.

47.? I. *martinicensis* (Presl. Symb. Bot. 1, p. 65, t. 42), ramulis petiolis costisque foliorum ferrugineo-pubescentibus, petiolo nudo v. apice angustissime alato, foliolis bijugis obovatis sparse pilosulis, spicis cylindricis breviter pedunculatis, calyce tubuloso strigoso quam corolla hirsuta dimidio breviore, tubo stamineo incluso.—Mimosa coriacea, *Sieb. Fl. Martin*, n. 325.—From a specimen I formerly saw of this species, it appeared to me to have the inflorescence of Bourgonia with the flowers of Pseudinga. It is at any rate a very distinct species, which requires further examination to determine its affinities.—Martinica, *Sieber*.

48.? I. *vismiæfolia* (Pœpp. et Endl. Nov. Gen. et Sp. 3, p. 79), ramulis teretibus pedunculisque villoso-hirtis ferrugineis, foliolis trijugis late ovalibus obtusis basi rotundata subcordatis supra glabris lævibus subtus villosis fuscescentibus, spicis hemisphærico-capitatis longe pedunculatis in paniculam terminalem folio æqualem dispositis, calyce infundibuliformi sericeo, corolla strigosa-villosa staminum tubo exserto.—Arbor perquam pulchra, humilior. Foliola terminalia pedem longa, 6 poll. lata. Flores 11 lin. longi. Corolla duplici calycis longitudine. Ovarium sericeum. Legumen ignotum. This must be a very distinct species which I have not seen. It is said by Pœppig to be allied to I. rubiginosa, but the inflorescence and flowers are described as very different from those of that species, and indicate an affinity rather with Pseudinga than with Euinga, a point which cannot be determined till the pod is known.—Woods of Maynas, *Pœppig*.

49. I. *lineata*, ramulis petiolis pedunculisque ferrugineo-puberulis, foliolis 3-jugis ovali-ellipticis acuminatis basi angustatis utrinque adpresse pubescentibus, venis numerosis parallelis utrinque prominulis, spicis ovatis in alabastro subcylindricis, floribus sessilibus, calyce tubuloso-campanulato pilosulo quam corolla infundibuliformis villosa duplo breviore. —Foliola ultima 6-7 poll. longa, 3 poll. lata. Glandulæ magnæ, sessiles. Pedunculi in axillis numerosi, pollicares, ferrugineo-pubescentes, superiores breviter paniculati. Spicæ pollice breviores, ante antherim iis I. *Bourgoni* subsimiles,

51. I. *Pavoniana*, ramulis novellis ferrugineo-puberulis demum foliisque glabris, stipulis ovato-lanceolatis striatis, foliolis 3-4-jugis ovali-v. elliptico-oblongis breviter acuminatis basi inæqualiter cuneatis supra nitidulis subcoriaceis, pedunculis longiusculis fasciculato-paniculatis, spicis breviter ovatis, floribus breviter pedicellatis, calyce tubuloso puberulo quam corolla sericea duplo breviore, legumine plano glabro v. vix minute puberulo.—I. *Riedelianæ* similis, sed distincta videtur. Foliola minora. Inflorescentia et præsertim flores minus villosa. Stipulæ superiores, imprimis foliorum floralium abortientium, rigidæ, 3-4 lin. longæ, diu persistentes. Flores tenuiores, corollæ ratione calycis paullo longiores. Legumen 3-poll. longum, 9 lin. latum.—Sent by *Mathews* from *Pavon's* herbarium at Lima.

52. I. *Riedeliana*, ramulis novellis ferrugineo-puberulis demum foliisque glabris, stipulis parvis deciduis, foliolis 3-jugis ovali- v. elliptico-oblongis breviter acuminatis basi inæqualiter cuneatis supra nitidulis, spicis fasciculato-paniculatis ovatis, floribus breviter pedicellatis, calyce tubuloso-pubescente corollæ sericeo-villosæ dimidium superante, legumine plano puberulo.—Foliola fere I. *corymbiferæ* sed rigidiora et semper trijuga videntur, ultima vix 5-pollicaria; venæ subtus interdum leviter tomentellæ. Flores I. *corymbiferæ*, sed stipatæ pedicello ½-1 lin. longo bracteas æquante. —Woods on the Amazon river, *Riedel*.

β? *Surinamensis*, floribus brevius pedicellatis.—Surinam, *Hostmann*, n. 830, 971, and in some collections n. 174.—This variety is in some measure intermediate between I. *Riedeliana* and I. *corymbifera*, and may possibly be a distinct species, unless further observation may show both I. *Pavoniana* and I. *Riedeliana* to be mere forms of I. *corymbifera*.

53. I. *corymbifera* (Benth. in Hook. Journ. Bot. 2, p. 144), ramulis novellis petiolisque ferrugineo-puberulis, foliolis 4-jugis ovali-oblongis acuminatis basi cuneatis supra ad venas et subtus minute et rariter puberulis demum vix nitidis, spicis pedunculatis ad apices ramorum fasciculato-pani-

culatis, floribus subsessilibus, calyce tubuloso pubescente corollæ sericeo-villosæ dimidium æquante v. superante, legumine plano minute et rariter puberulo.—Foliola maxima semipedalia v. paullo longiora, 2-2½ poll. lata, pleraque tamen minora. Glandulæ majusculæ. Pedunculi 1-1½-pollicares. Flores interdum brevissime pedicellati. Bracteæ minutæ. Calyx 3 lin., corolla 5 lin. longa. Legumen 3-4 poll. longum, 9-11 lin. latum, marginibus parum elevatis.—British Guiana, *Schomburgk*, 1*st*. *Coll.*, also 2*nd*. *Coll.* n. 31, n. 62, and n. 839 (1419).

β? *Brasiliensis*, ramulis floribusque villosioribus, nec aliter ut videtur diversa.—Woods of the Serra da Chapada in Brasil, *Riedel.*

53. I. *tenuifolia* (Salzm.! Pl. Bras. exs.) ramulis petiolis inflorescentiaque ferrugineo-tomentellis, spicis pedunculatis ad apices ramorum fasciculato-paniculatis, oblongis, floribus sessilibus elongato-tubulosis, calyce tubuloso tomentoso striato corolla sericeo-villosa 3-4-plo breviore, tubo stamineo breviter exserto.—I. macradenia *Mart.! Herb. Fl. Bras.* n. 1096.—Pubes minuta, in ramulis petiolisque sordide ferruginea, in ramis evanida, in foliorum pagina inferiore brevissima, copiosa, albida; in pagina superiore pili minuti sparsi sub lente numerosi apparent. Foliola ultima 4-5

1-1½ poll. lata.—Banks of the Magdalena, *Humboldt* and *Bonpland*. Unknown to me.

55. I. *juglandifolia* (Willd. Spec. 4, p. 1018), ramulis petiolisque ferrugineo-pubescentibus, glandulis nullis, foliolis 3-4-jugis oblongis acuminatis basi angustatis glabris subtus ad venas pubescentibus, spicis in axillis ternis, corollis villosis, legumine plano. — Foliola ultima 5-pollicaria. — Caraccas, *Bredemeyer*. I have not seen this species which appears to belong to the Pseudingæ Gymnopodæ, and if so, it is the only one in the group without glands.

56. I. *foliosa*, foliis demum glabris, foliolis 5-6-jugis amplis elliptico-oblongis acuminatis v. rarius obtusis subcoriaceis nitidis, panicula tomentella, floribus sessilibus, calyce puberulo corollæ sericeo-puberulæ dimidium subæquante, legumine plano puberulo.—Foliola longiora usque ad 7-10 poll. longa, 2½ poll. lata, longius breviusve acuminata, basi inæqualiter rotundata v. leviter angustata petiolulo 2 lin. longo. Spicæ breves, ovatæ, numerosæ. Calyx 1½-2 lin., corolla 4 lin. longa. Variat floribus paullo majoribus minoribusve, pube tenuiore v. densiore.—North Brasil, in the province of Maynas, *Pœppig*; on the Rio Madeira, *Riedel*; Peru, *Mathews*, n. 1923.

57. I. *acrocephala* (Steud. Flora 1843, p. 759), foliis glabris, foliolis 4-jugis ovali- v. elliptico-oblongis acuminatis coriaceis nitidis, panicula polycephala minute tomentella, floribus sessilibus pubescentibus, calyce quam dimidium corollæ longiore.—Affinis I. *foliosæ*; foliola pauciora ultima semipedalia. Spicæ ovato-capitatæ, numerosæ. Flores quam in I. *foliosa* glabriores, minores, vix 3 lin. longi.—Surinam. *Hostmann*, n. 106.

58. I. *nobilis* (Willd. Enum. p. 1047), foliolis 3-4-jugis oblongis acutis petiolisque glabris, spicis paniculatis, pedunculis pubescentibus, corollis sericeis.—Brasil. A species only known from the above short diagnosis.

59. I. *leptoloba* (Schlecht. Linnæa, 12, p. 560), puberula, foliolis trijugis utrinque lucidulis subtus magis puberulis ellipticis v. ovato-ellipticis basi acutis cuneatisve apice acuminatis,

spicis pedunculatis axillaribus in ramis hornotinis, corolla pubescente calyce duplo longiore, legumine compresso elevato-marginato vix puberulo. — Foliola maxima 4-5-pollicaria. Flores 4 lin. longi. Legumen brevissime stipitatum, lato-lineare, acuminato-acutum, 10-12-spermum.—Hacienda de la Llaguna, in Mexico, *Schiede*. Unknown to me.

60. I. *punctata* (Willd. Spec. 4, p. 1016), foliolis 2-3-jugis oblongis acuminatis coriaceis nitidis supra glabris subtus sparse pilosiusculis, petiolo strigoso, spicis paniculatis axillaribus, corollis sericeo-villosis.—Foliola ultima 4-pollicaria. —Woods of Martinica and Caraccas. Unknown to me.

61. I. *splendens* (Willd. Spec. 4, p. 1017), foliolis 2-jugis oblongis acuminatis nitidis utrinque petiolisque glabris, spicis axillaribus geminatis, corollis sericeo-villosis.—Unknown to me, said to be like I. *punctata*, but larger in all its parts.—Para, *Hoffmansegg*.

62. I. *leiocalycina*, foliolis 2-jugis ovali-oblongis acuminatis basi cuneatis nitidis utrinque sparse pilosiusculis, venis petiolisque villosis, pedunculis gracilibus, floribus sessilibus, calycibus glabris corollæ sericeo-villosæ dimidium æquantibus.—Ex descriptione I. *punctatæ* affinis, sed pili sparsi in utraque pagina foliolorum adsunt et raro tardius evanescunt; venæ semper in pagina superiore dense stri-

culis, foliolis bijugis ovali-ellipticis v. ovato-oblongis breviter acuminatis coriaceis nitidis utrinque adpresse pilosiusculis v. demum subtus glabratis, pedunculis fasciculatis tenuibus, spicis ovato-globosis, calyce glabro striato corollæ hirsutissimæ dimidium æquante.—Affinis I. *leiocalycinæ*, sed petiolus glaber, angustissime at distincte marginatus. Pedunculi numerosi, bipollicares, glabri. Calyx 2 lin. longus, nitidulus, in sicco rufescens. Corolla 4 lin. longa, pilis aureis dense obtecta.—Borba, in North Brasil, *Riedel.*

54. I. *stenoptera* (Benth. in Hook. Journ. Bot. 2, p. 143), ramulis petiolis nervisque foliolorum rufo-pubescentibus, petiolo anguste alato, foliolis bijugis oblongis acutis nitidis sparse pilosulis v. demum glabratis, spicis ovato-globosis paucifloris, calyce tubuloso pilosulo quam corollæ hirsutissimæ dimidium breviore.—Foliola ultima 5-6 poll. longa, 18-20 lin. lata, basi sæpe valde obliqua. Alæ petioli utrinque vix lineam latæ. Pedunculi tenues, bipollicares. Bracteæ parvæ, setaceæ. Calyx 2 lin., corolla 7 lin. longa.—On the Rio Branco, North Brasil, *Schomburgk*, *1st. Coll.* n. 795.

65. I. *peduncularis*, ramulis petiolis pedunculisque minutissime puberulis, petiolo sub foliolis superioribus angustissime alato-marginato, foliolis bijugis amplis ovalibus acuminatis basi cuneatis coriaceis nitidis utrinque pilis minutis conspersis, pedunculis fasciculatis, spicis ovatis, calyce adpresse villosulo corollæ sericeo-villosæ dimidium æquante. Petioli alæ coriaceæ, nunc apice utrinque 1 lin. latæ, ad medium internodii evanescentes, nunc obsoletæ. Foliola ultima 6-10 poll. longa, 3-4½ poll. lata. Pili in utraque pagina vix nisi ope lentis conspicui. Pedunculi 3-pollicares. Calyces 3 lin. corollæ 6 lin. longæ.—Borba in North Brasil *Riedel.*

66. I. *pilosiuscula* (Desv. Journ. Bot. 1814, 1, p. 71), ramulis petiolisque pilosulis, petiolo alato, foliolis bijugis ovatis v. ovato-oblongis breviter acuminatis coriaceis nitidis junioribus pilosis demum subglabris, pedunculis fasciculatis, spicis oblongis, calyce tubuloso glabro v. pilosulo corollæ

hirsutissimæ dimidium æquante.—Mimosa pilosiuscula, *Rich. Act. Soc. Hist. Nat. Par.* 1, p. 113.—M. lucida, *Vahl. Ecl. Amer.* 3, p. 31, t. 24.—Inga affinis, *Steud. Flora*, 1843, p. 758.—Foliola ultima 4-6 poll. longa, 2-3 poll. lata. Petioli alæ coriaceæ, utrinque superne 2 lin. latæ. Inflorescentia I. *multifloræ* et flores consimiles nisi longiores; calyx 3-4 lin., corolla 6-7 lin. longa. Bracteæ subulatæ, 1-1½ lin. longæ.—French Guiana, *Leprieur*, *Martin*, &c.; Surinam, *Hostmann*, n. 1157.

67. I. *setifera* (DC. Prod. 2, p. 432), ramulis petiolis pedunculisque rufo-pubescentibus, petiolo alato, foliis bijugis amplis ovatis breviter acuminatis coriaceis nitidis utrinque rufo-pilosis v. supra demum glabratis, spicis ovatis, calyce tubuloso pilosiusculo corollæ hirsutissimæ dimidium æquante, legumine plano demum glabrato marginibus elevatis.—I. platycarpa, *Benth. in Hook. Journ. Bot.* 2, p. 142.—Affinis I. *pilosiusculæ*. Foliola multo majora, crassiora, usque ad 10 poll. longa et 6 poll. lata. Flores 6 lin. longi, iis I. *pilosiusculæ* similes. Legumen 4-6 poll. longum, 1-1½ poll. latum.—On the Essequebo and the Rupunoony, *Schomburgk*, 1*st Coll.* n. 534, 2*nd. Coll.* n. 586 (959); French Guiana, *Martin*.

68. I. *acuminata*, ramulis petiolisque glabris v. vix pilo-

foliola longiora, spicæ oblongæ nec ovatæ longius pedunculatæ, ramuli hirti. Foliola superiora 4-5-pollicaria.—Para, *Hoffmansegg*. Unknown to me.

70. I. *quassiæfolia* (Willd. Spec. 4, p. 1013), foliolis bijugis ovato-oblongis acuminatis utrinque nitidis glabris, petiolo undique alato, spicis axillaribus pedunculatis, corollis villosis. —Foliola superiora 3-pollicaria et majora, inferiora 1½-pollicaria. Pedunculi pilis raris sparsis obsiti.—Para, *Hoffmansegg*. Unknown to me.

71. I. *chartacea* (Pœpp.! et Endl. Nov. Gen. et Sp. 3, p. 79), ramulis foliisque glabris, petiolo alato, foliolis 3-jugis ovali-v. obovali-ellipticis acuminatis rigidulis nitidis, spicis longe pedunculatis subglobosis densis, floribus parvis, calyce pilosulo corollæ sericeo-villosæ dimidium æquante.—Partes novellæ ferrugineo-hirtæ, pube cito evanida. Foliola ultima semipedalia. Capitula magnitudine Cerasi. Calyx 1 lin., corolla 2 lin. longa.—Woods of the province of Maynas, *Pœppig*.

72. I. *maritima*, ramulis pilosiusculis, petiolo alato, foliolis 2-3-jugis elliptico-oblongis basi obliquis supra minute pilosis demum glabratis nitidulis subtus hirtellis, spicis ovatis breviter pedunculatis in apicibus ramorum confertis, calyce adpresse pubescente quam corollæ sericeæ dimidium breviore. —Inflorescentia et floribus similior Gymnopodis quam Pilosiusculis, sed petiolus latiuscule alatus. Foliola majora vix tripollicaria, subcoriacea; petiolus communis brevis. Spicæ ante anthesin oblongæ, per anthesin pollicares in pedunculo vix semipollicari. Bracteæ minutæ. Calyx vix 2 lin., corolla 4-4½ lin. longa.—Near the sea shore, Capo Cabana beach, Rio Janeiro, *Gardner*, n. 751; Rio Janeiro, *Vauthier*, n. 89.

A specimen in fruit gathered on the Corcovado by *Lushnath* is very much like this species, but the wings of the petiole are narrower, and the spike appears to have been much longer. The pod is flat, 4 inches long, 9 lines broad, with a few short hairs.

73? I. *Feuillei* (DC. Prod. 2, p. 433), petiolo alato, foliolis 3-4-jugis ovali oblongis utrinque acutis glabris, spicis subgeminis pedunculatis ovatis, leguminibus longissimis linearibus planis glabris.—Pacai, *Feuill. obs*, 3, p. 2, p. 27, t. 19 (et ex hoc synon.) Mimosa sinemariensis, *Aubl. Pl. Gui.* 2, p. 945, Inga reticulata, *Spreng. Syst.* 3, p. 130.—Flores albi. Legumina edulia, 1-2-pedalia, intus alba.—Cultivated in the Lima gardens. Unknown to me.

§ 4. *Leptanthæ.* Folia et ramuli saltem juniora piloso-hirta. Petiolus alatus. Glandulæ turbinatæ v. stipitatæ. Spicæ ovato-oblongæ, laxæ, sæpe interruptæ. Bracteæ persistentes, calyce longiores v. rarius breviores. Flores tenues. Calyx tubulosus, membranaceus, striatus, glaber v. adpresse pilosus. Corolla apice v. sæpe undique, longe pilosa. Series imprimis bracteis a Pilosiusculis differt.

74. I. *Pœppipgiana*, ramulis subhirsutis, foliolis trijugis ovali-oblongis acuminatis basi oblique rotundatis supra nitidis margine nervisque utrinque pilosis, spicis sessilibus oblongis, bracteis ovatis acutis glabris ciliatis calyce elongato multo brevioribus, corolla calyce subduplo longiore apice parce et longe pilosa.—I. ciliata, *Pœpp.! et Endl. Nov. Gen. et Sp.* 3, p. 78, non *Presl.*—Pili patentes rigiduli. Stipulæ ovatæ, striatæ, semi-pollicares. Foliola ultima 4-5 poll. lata. Alæ petioli latiusculæ. Bracteæ ratione calycis breviores quam in cæteris Leptanthis, multo majores et diutius persistentes quam in Pilosiusculis, striatæ, 2-3 lin. longæ. Calyces 7-8

76. I. *disticha* (Benth. in Hook. Journ. Bot. 2, p. 143), undique pilis brevibus ferrugineis raris conspersa, foliolis 4-5-jugis ovali- v. anguste oblongis acuminatis membranaceis demum nitidis, spicis interruptis distichis breviter pedunculatis bracteis ovato-lanceolatis calyce parum brevioribus, corolla hirsutissima calycem tubulosum strigoso-hispidum subtriplo superante, legumine plano arcuato marginato ferrugineo-hirto.—Foliola ultima 3-4 poll. longa, 1¼ poll. lata, demum subcoriacea. Glandulæ parvæ. Stipulæ lanceolato-setaceæ, 3 lin. longæ. Legumen (immaturum) 5-6 lin. latum.—Common along the Essequibo, *Schomburgk*, 1*st Coll.* n. 25.

77. I. *leptantha*, ramulis petiolisque pilosis, foliolis 2-4-jugis lanceolatis ultimis longissimis acutis supra glabris nitidis subtus pilosiusculis, glandulis tenuibus stipitatis, pedunculis gracilibus, spicis laxis ovatis, bracteis persistentibus linearibus calycem subæquantibus, calyce tubuloso pilosulo quam corolla tenuis hirsutissima triplo breviore, legumine plano hirsutissimo. — Foliola ultima 3-4 poll. longa, 5-8 lin. lata. Stipulæ falcatæ, ciliatæ, 4-6 lin. longæ, subpersistentes. Bracteæ glabræ, ciliatæ, uti calyces 2-2½ lin. longæ. Corolla gracilis, 7 lin. longa. Legumen 4-6 poll. longum, fere pollicem latum.—Prope Rio Janeiro, *Gomez*, *Sello*, *Riedel*.

78. I. *ciliata* (Presl, Symb. Bot. 2, p. 14, t. 58), ramulis petiolisque pilosulis, glandulis stipitatis, foliolis plerique 4-5-jugis oblique ovali- v. anguste oblongis acuminatis supra glabris nitidis subtus pilosiusculis, pedunculis tenuibus, spicis interruptis paucifloris, bracteis persistentibus setaceis calyces subæquantibus, calyce tubuloso glabriusculo quam corolla hirsuta tenuis plus duplo breviore, legumine plano hirsuto.—I. cœrulescens, *Walp. Linnæa*, 14, p. 298.—I. fragariæfolia, *Mart. Herb. Fl. Bras.* n. 1093.—I. microphylla, *Salzm. Herb.* — Affinis I. *leptanthæ*; foliola latiora, ultima raro 2 pollices excedunt; legumina angustiora, minus hirta. Flores in schedis Lushnathianis pallide cærulei dicuntur, color in Ingis nondum memorata.—Near Bahia, *Salzmann*, *Lushnath*, *Sello*, *Blanchet*, n. 86 A. In some herbaria I had formerly named this by mistake I. *tenuis*. Mart.. which it

resembles in foliage, but is very different in flowers and inflorescence.

β. parvifolia, foliolis 5-6-jugis minoribus, legumine majore latiore hirsutimo.—Rio Janeiro, *Lord Colchester*, *Sello*.

§ 5. VULPINÆ. Folia et ramuli pilosa-hirta. Petiolus alatus v. rarius apterus. Glandulæ stipitatæ, anguste turbinatæ v. subulatæ. Spicæ ovatæ, densæ, pedunculatæ, axillares v. superiores subpaniculatæ. Bracteæ caducissimæ, sæpius parvæ.—Series a Gymnopodis et Pilosiusculis imprimis glandulis dignoscenda, a Leptanthis bracteis et inflorescentia.

79. I. *vestita*, ramulis petiolisque dense rufo-villosis, petiolo aptero, glandulis subulato-stipitatis, foliolis 3-4-jugis elliptico-oblongis acutis basi cuneatis utrinque villosis, spicis ovatis, bracteis parvis, calyce tubuloso strigoso dimidium corollæ hirsutissimæ subæquante, legumine plano rufo-villosissimo.—Foliola ultima 2-2½-pollicaria, cœtera multo minora, iis I. *Guilleminianæ* similia. Glandulæ fere lineam longæ. Pedunculi pollicares, rufo-villosi. Calyx 2¼ lin., corolla 5 lin. longa. Legumen pollicem latum, densissime velutino-villosum.—Brasil, *Sello*. There is also in the same collection a specimen of what appears a very distinct species, with subulate glands and the petiols not winged, but there are neither flowers nor fruit.

lisque densis, in foliolis sparsis, petiolo alato, glandulis subulato-stipitatis, foliolis 3-4-jugis ovatis bullato-rugosis, spicis breviter pedunculatis oblongis, calyce parce piloso quam corollæ hirsutissimæ dimidium breviore.—Foliola 2-3-pollicaria, v. ultima majora, obtusa v. acuta, basi rotundata. Stipulæ ovatæ. Glandulæ fere 2 lin. longæ. Flores quam in I. *vulpina* tenuiores. Calyces 3 lin., corollæ 7 lin. longæ.——Organ Mountains, *Gardner*, n. 362, *Burchell.*

82. I. *Guilleminiana*, ramulis petiolisque dense rufo-villosis, petiolo a basi alato, glandulis parvis stipitatis, foliolis 2-4-jugis elliptico-oblongis acutis basi rotundatis utrinque villosis, spicis ovato-oblongis, calyce hirsuto corollæ hirsutissimæ dimidium superante, legumine plano rufo-villosissimo.—Foliola parum inæqualia, 1-1½-pollicaria v. ultima paullo longiora. Glandulæ inter villis fere reconditæ. Stipulæ lineari-lanceolatæ, breves. Pedunculi 1½-2-pollicares. Bracteæ lineares, cito deciduæ. Calyx 3-3½ lin. longus, tubulosus. Corolla 5-6 lin. longa.—In Brasilia, *Sello*; prov. S. Paulo, *Guillemin*, n. 511; ad Rio Parano et Pardo, *Riedel.*

83. I. *virescens*, ramulis petiolis costis marginibusque foliolorum hirtellis, petiolo inter paria alato, glandulis parvis crasse stipitatis, foliolis 4-5-jugis ovato-lanceolatis membranaceis junioribus pilosis demum glabratis, spicis ovato-oblongis, bracteis minutis, calyce pilosulo corollæ parce pilosæ dimidium superante.—Stipulæ parvæ, lineares. Foliola majora 3-pollicaria. Pedunculi in ramis annotinis fasciculati, sub spica 1-1½ poll. longi. Spicæ vix pollicares, basi interdum interruptæ. Flores in sicco virescentes. Calyx 2½ lin., corolla 4 lin. longa.—Brasil, *Sello.*

84. I. *Catharinæ*, ramulis petiolis pedunculis costisque foliolorum rufo-hirtis, petiolo inter paria alato, glandulis parvis turbinatis breviter stipitatis, foliolis sub-4-jugis ovali- v. oblongo-ellipticis junioribus pilosis, spicis ovato-oblongis, bracteis linearibus calyce pilosulo paullo brevioribus, corolla rufo-villosa.—Affinis I. *virescenti*, sed villosior, foliola majora, ultima sub-4-pollicaria. Bracteæ 2-2½ lin. longæ. Calyces I. *virescentis*, corollæ nondum apertæ sed multo villosiores

videntur. Stipulæ lato-lanceolatæ, falcatæ, villosæ, 4-5 lin. longæ.—St. Catherine's, in South Brasil, *Tweedie.*

§ 6.? *Floribundæ.* Folia glabra v. minute pilosula. Petiolus alatus. Glandulæ magnæ scutellæformes. Spicæ breviter pedunculatæ, oblongæ v. dissitifloræ, ad apices ramorum subpaniculatæ. Bracteæ calycem subæquantes, lanceolatæ, ante anthesin deciduæ. Calyx puberulus. Corolla sericea.—The two following species are of very doubtful affinity, resembling in some respects the *Pilosiusculæ* among *Pseudingæ*, in others the *Striatæ* among *Euingæ*, and the fruit being unknown, their real position cannot now be ascertained.

85. I. *floribunda* (Benth. in Hook. Journ. Bot. 2, p. 143), ramulis foliisque glabris v. junioribus vix pilosiusculis, petiolo breviter et anguste alato, foliolis bijugis ovali-ellipticis coriaceis nitidis, spicis oblongis subinterruptis corymboso-paniculatis, calyce tubuloso adpresse pubescente dimidium corollæ sericeæ adæquante.—Arbor præalta. Foliola majora 4-6 poll. longa, 2-3 poll. lata, basi valde inæqualia. Petioli alæ coriaceæ, raro linea latiores et sæpius paullo infra paria foliolorum evanescentes. Flores numerosi, sessiles. Bracteæ caducissimæ, uti calyces 4-4½ lin. longæ. Corolla 8-9 lin. longa.—British Guiana, *Schomburgk*, 1*st. Coll.* n. 364; Surinam, *Hostmann*, n. 708, also n. 676, judging from an imperfect

tubulosus v. tubuloso-campanulatus quam in *Pseudingis* fere semper latior. Corolla villosa. Leguminis margines valde dilatati, sulcato-incrassati, latitudine (transversali) leguminis facies æquantes v. superantes.—Petiolus alatus v. rarissime apterus. Glandulæ scutellæformes v. rarius turbinatæ. Flores majusculi nunc maximi, absque staminibus ½-2 poll. longi. Calyx in seriebus 2 prioribus striatus glaber v. pilosulus, in cæteris tomentosus. Corolla villosa v. tomentoso-lanata. Legumen sæpe tetragonum v. subteres, plurisulcum, marginibus demum facies fere omnino obtegentibus.

§ 1. *Striatæ.* Ramuli teretes v. subangulati uti petioli et pedunculi glabri v. velutino-hirti, (rarius setosi). Bracteæ caducæ. Calyx membranaceus, striatus, glaber v. tenuiter pubescens. Corolla setosa v. hirsutissima.

87. ? I. *setigera*, (Pœpp. et Endl. Nov. Gen. et Sp. 3, p. 79), ramulis teretibus petiolisque nudis rigidissime longisetis hispidis, foliolis 5-jugis elongato-oblongis acutis basi obtusis supra pubescenti-hispidis subtus glabris, spicis axillaribus petiolo duplo brevioribus hemisphærico-capitatis pedunculatis, calyce infundibuliformi glabro, corolla apice setosa, tubo staminum longissime exserto.—Arbor 20-pedalis. Stipulæ pollicares, diu persistentes, rhombeo-ellipticæ. Foliola adulta pedalia. Flores majusculi.—Woods near Ega, in North Brasil, *Pœppig*. This must be a very distinct species from any I have seen, agreeing in some respects with the *Pseudingæ Vulpinæ*, in others with *Euingæ Striatæ*, or *Calocephalæ*.

88. I. *bullata*, ramulis petiolis costisque foliolorum velutino-hirtis, petiolo nudo, glandulis turbinatis, foliolis 2-3-jugis ovatis acuminatis bullatis supra nitidulis subtus pubescenti-hirtis, spicis ovatis breviter pedunculatis, calyce glabro quam corolla setosa paullo breviore.—Foliola ultima 5 poll. longa, 3 poll. lata. Bracteas non vidi. Calyces brevissime pedicellati, laxi, fere 5 lin. longi, dentibus angustis acutissimis. Corolla 6 lin. longa.—Shady woods of Mandiocca, near Rio Janeiro, *Riedel.*

89. I. *nuda* (Salzm.! Pl. exs.), ramulis foliisque pilis bre-

vibus hirtellis, petiolo sub paribus ultimis brevissime et anguste alato v. nudo, glandulis turbinatis, foliolis 3-4-jugis elliptico-oblongis v. ovato-lanceolatis supra demum nitidulis glabratis, spicis ovatis breviter pedunculatis, calyce glabriusculo dimidium corollæ dense villosæ vix æquante.—Foliola ultima 5 poll. longa, vix 2 poll. lata, basi obtusa, inæqualia, apice obtuse acuminata. Calyx 3 lin. longus, dentibus ovatis. Corolla 6 lin. v. paullo longior. Bracteæ oblongæ v. lineares, calyce 2-3-plo breviores.—Bahia, *Salzmann.*

90. I. *Salzmanniana,* ramulis angulatis foliisque minute scabro-puberulis, junioribus ferrugineis, petiolo anguste alato, foliolis 4-5-jugis obovali- v. oblongo-ellipticis acuminatis submembranaceis, glandulis scutelliformibus, spicis ovato-oblongis breviter pedunculatis, calyce puberulo dimidium corollæ sericeo-villosæ vix æquante.—I. ovato-lanc. *Salzm. herb.*—Habitu accedit ad I. *nudam,* sed pubes multo brevior, foliola paullo latiora minus nitida, et petiolus a pari ad par alatus, alis raro linea latioribus. Folia iis I. *scabriusculæ* similia, sed calyx laxior, evidentius striatus, 3-3½ lin. longus et corolla multo villosior, 7 lin. longa. Bracteæ lineari-lanceolatæ, calyce vix breviores, ante anthesin deciduæ.—Bahia, *Salzmann.*

91. I. *striata,* ramulis petiolis pedunculis foliolisque velu-

calyce tubuloso striato sericeo-pilosulo quam dimidium corollæ sericeo-villosæ breviore.—Species distinctissima fructu ignoto quoad affinitates dubia. Petioli alæ apice et basi longe angustatæ. Foliola ultima in specimine 9 poll. longa, 4½ poll. lata, lætevirentia, membranacea, mollia. Bracteæ lineari-lanceolatæ, caducæ. Calyx 5 lin., corolla 11 lin. longa.—Teapa, in South Mexico, *Linden*, n. 726.

§ 2. *Calocephalæ.* Ramuli crassi, angulati, uti folia glabri v. præsertim juniores hispidi. Bracteæ majusculæ, sæpe persistentes. Calyx membranaceus, striatus, glaber vel tenuissime pubescens. Corolla longe tubulosa, hirsutissima. Foliola ampla, ultima semipedalia ad pedalia. Glandulæ sessiles v. breviter stipitatæ.

93. I. *bracteosa*, ramulis foliisque parce hirtellis demum glabratis, petiolo nudo, foliolis 3-jugis maximis ovali-ellipticis breviter acuminatis basi rotundatis, spicis ovato-capitatis, bracteis lanceolatis acuminatissimis calyces æquantibus, calycis longe cylindrici glabriusculi dentibus subulato-acuminatis, corolla hirsutissima calyce duplo longiore.—Foliola ultima 10-11 poll. longa, 6 poll. lata. Stipulæ ovatæ. Glandulæ breviter stipitatæ. Calyces pollicares. Corolla 1¾ poll. longa. Stamina cum flore ultra 3 poll. longa, tubo longe exserto.—British Guiana, *Schomburgk*, *2nd. Coll.* n. 695 (1080.)

94. I. *spectabilis* (Willd. Spec. 4, p. 1017), petiolo nudo v. angustissime marginato, foliolis 2-jugis ovatis acutis basi inæqualibus nitidis utrinque ramisque glabris, spicis oblongis, bracteis ovato-lanceolatis calyces superantibus, calyce tubuloso quam corolla hispida subtriplo breviore.—Mimosa spectabilis, *Vahl.! in Act. Soc. Hafn.* 2, p. 219, t. 10.—Foliola ultima 6-8-pollicaria. Calyces 3-4 lin., corolla 8-9 lin. longa. "Arbor procera, maxime spectabilis. Legumina longitudine pedis 1½-2, latitudine 3 uncias, perpendiculariter propter pondus magna in copia e ramis dependent. Semen pulpa nivea cincta. Flores candidi."—Cultivated in an Indian garden in the village of Gaira, near Santa Martha, *von Rohr.*

95.? I. *pruriens* (Pœpp. et Endl. Nov. Gen. et Sp. 3, p.

78), ramulis teretibus petiolis costisque foliorum rufo-hirsutis, foliolis 2-3-jugis amplis rigidissimis elliptico-obovatis obtusis basi cuneata rotundatis supra glabris basin versus uniglandulosis subtus hirto-pilosis, spicis solitariis sessilibus, calyce corollaque hirsutis. Foliola glandula cupuliformi in nervo versus laminæ basin sita insignia, terminalia 10 lin. longa, 5 poll. lata. Flores apertos non vidit cl. Pœppig.—Eastern Peru, in woods towards the Mission of Tocache, *Pœppig*. Unknown to me, and referable perhaps to the *Pseudingæ Pilosiusculæ*, or possibly allied to I. *Lindeniana*.

96. I. *fastuosa* (Willd. Spec. 4, p. 1014), ramulis ferrugineo-hirtis petiolo alato, foliolis 4-5-jugis ovato-oblongis acutis supra nitidis sparse pilosulis subtus ferrugineo-hirsutis, spicis paucifloris, bracteis......, calyce longo cylindrico glabriusculo quam corolla tubulosa hispidissima duplo breviore, "legumine lato lineari tortuoso."—Foliola superiora 4-pollicaria. Calyx pollicares. Stamina cum flore ultra 3 poll. longa, tubo longe exserto.—Caraccas, *Herb. Smith*.

97. I. *macrophylla* (Humb. et Bonpl. in Willd. Spec. 4, p. 1015), ramulis foliisque junioribus parce hirtellis demum glabratis, petiolo alato, foliolis 3-4-jugis amplis ovatis acutis subcordatis supra nitidis, spicis ovato-capitatis, bracteis

alato, glandulis stipitatis, foliolis 3-jugis amplis ovali-ellipticis acute acuminatis basi rotundatis supra nitidis, spicis ovato-capitatis, bracteis ovatis acutis calyce magno cylindrico vix brevioribus, corolla calyce duplo longiore sericeo-hirsutissimo, legumine hirsutissimo.—Affinis I. *macrophyllæ*, sed alis petioli brevibus, foliolis basi angustatis etc., distincta videtur. Leguminis facies planæ, margines valde dilatati sulcati.—Tumaco in Columbia, *Hinds*.

99. I. *heteroptera*, ramulis foliisque demum glabratis, petiolo sub paribus omnibus alato, foliolis 3-jugis amplis ovali-ellipticis longe acuminatis basi valde obliquis, spicis ovato-capitatis, bracteis ovatis deciduis calycem late tubulosum puberulum æquantibus, corolla sericeo-hirsutissima calyce plus duplo longiore.—I. *brachypteræ* similis quidem, sed pluribus notis et imprimis floribus multo minoribus distincta. Foliola ultima fere pedalia, 4-5 poll. lata. Pedunculi apice ancipites 2-2½-pollicares. Calyx 3-3½ lin. longus, tenuis, laxior quam in præcedentibus. Corolla 9-10 lin. longa, pilis flavicantibus dense obtecta. Tubus stamineus exsertus. Legumen ei I. *brachypteræ* simile dicitur.—San Pedro in Columbia, *Hinds*.

100. I. *lucida* (Humb. et Kunth, Nov. Gen. et Sp. 6, p. 287), ramulis foliisque glabris, petiolo sub paribus alato, foliolis bijugis amplis subellipticis subacuminatis basi valde inæqualibus nitidis, spicis elliptico-oblongis, bracteis lanceolato-oblongis calycem duplo superantibus, calyce tubuloso-campanulato sericeo-pubescente quam corolla lanuginoso-sericea subtriplo breviore.—Foliola ultima 6-7 poll. longa, 3½ poll. lata. Bractea 8 lin., calyx 4 lin., corolla ultra 10 lin. longa. Legumen bipedale.—Banks of the Magdalena, near Badillas, *Humboldt* and *Bonpland*. Unknown to me.

101. I. *fulgens* (Kunth, Pl. Legum. p. 36, t. 11), ramulis foliisque glabris, petiolo sub paribus alato, foliolis 2-3-jugis amplis obovali-ellipticis utrinque rotundatis coriaceis nitidis, spicis elliptico-oblongis, bracteis ovatis acutis calycem tubuloso-campanulatum duplo superantibus, corolla hirsuto-sericea

calyce 3-4-plo longiore.—Foliola ultima 6½-7½ poll. longa, 4 poll. lata. Bracteæ 6 lin., calyx 3 lin., corolla ultra 8 lin. longa.—Near Honda, in New Granada, *Humboldt* and *Bonpland*. Unknown to me.

I have seen a specimen without flower in the Berlin herbarium, gathered by Billberg near Porto Bello, which appears to belong to a distinct species of this series.

§ 3. *Calycinæ*. Spicæ pauciflora. Calyx sessilis, crasso-coriaceus, ultra 9 lin. longus. Corolla villosissima. Legumen crassissimum, sæpius falcatum, villosissimum, margine exteriore demum verrucoso corrugato crassissimo. An genus proprium?—Pubes rufa. Foliola plurijuga. Petiolus alatus. Glandulæ scutellæformes.

102. I. *calycina*, ramulis petiolis pedunculis costisque foliolourm rufo-pubescentibus, foliolis 6-7-jugis oblongo-lanceolatis acuminatis supra demum glabriusculis, subtus ferrugineo-pubescentibus, spicis interruptis paucifloris, calycibus corollam villosam æquantibus.—I. *sessili* fere in omnibus similis, calycibus exceptis 16-17 lin. longis. Legumen idem. —Brasil, between Itamaratim (or Inhumerim?) and Congosoco, *Riedel*.

103. I. *sessilis* (Mart. Herb. Fl. Bras. p. 114), ramulis petiolis pedunculis costisque foliolorum rufo-velutinis, foliolis

§ 4. *Erianthæ.* Omnia *Verarum* nisi calyces sæpius pedicellati et corollæ pilis crispis v. implexis lanatæ. Petiolus apterus v. alatus. Glandulæ acutellæformes.

104. I. *rubiginosa* (DC. Prod. 2, p. 434) ramulis petiolis pedunculisque ferrugineo-velutinis, petiolo nudo, foliolis 4-5-jugis ovatis v. elliptico-oblongis acuminatis superne nervo excepto subglabris nitidis subtus ferrugineo-velutinis, spicis interruptis paucifloris, calyce sessili campanulato corolla plus triplo breviore.—Foliola ultima 6-8 poll. longa, 2½-4 poll. lata, basi rotundata. Spica cum pedunculo brevi 2-4-pollicaris. Bracteas non vidi. Calyx arcte sessilis, 3 lin. longus, ferrugineo-velutinus. Corolla fere pollicaris, pilis crispulis villosissima.—Demerara, *Parker*; Cayenne, *Martin.*

105. I. *subnuda* (Salzm.! Pl. exs.), ramulis petiolis pedunculisque ferrugineo-pubescentibus subvelutinis, petiolo sub paribus ultimis breviter alato, foliis 3-jugis ovali- v. oblongo-ellipticis acuminatis supra nervo excepto glabris nitidis subtus ferrugineo-pubescentibus, racemis oblongis, calycibus campanulatis pedicellatis corolla subtriplo brevioribus.—Foliola demum quam in I. *rubiginosa* crassiora, ultima semipedalia. Alæ sub paribus 1-2 ultimis plus minus dilatatæ, mox evanescentes. Racemi superiores paniculati. Pedicelli calyce paullo breviores. Calyx 2½ lin., corolla 6-8 lin. longa.—Bahia, *Salzmann.*

106. I. *ingoides* (Willd. Spec. 4, p. 1012), ramulis petiolis inflorescentiaque tomentosis, petiolo inter paria alato, foliolis plerisque 4-jugis ovali-oblongis acuminatis mucronatisve supra puberulis subtus tomentosis, racemis pedunculatis, pedicellis calyce vix brevioribus, calycibus campanulatis tomentosis corolla dimidio brevioribus, legumine subtereti sulcato.—I. Merianeæ, *Splitg. Pl. Nov. Surin.* p. 19.—Foliola ultima 4-6 poll. longa, 2-3 poll. lata. Racemi elongati v. rarius corymbiformes. Calyx 3 lin., corolla 6 lin. longa. Variat foliolis latioribus angustioribusve, supra lucidis v. opacis.—Jamaica, *Stuart*; Dominica, *herb. Hooker*; St. Vin-

cent's, *Guilding*; Demerara, *Parker*; Surinam, *Hostmann*, n. 685 and 884.

107. I. *eriantha*, ramulis petiolis inflorescentiaque ferrugineo-velutinis, petiolo inter paria alato, foliolis plerisque 4-jugis ovatis obtusis v. rarius subacuminatis supra puberulis demum nitidis subtus ferrugineo-velutinis, spicis laxis, calycibus brevissime pedicellatis campanulatis corolla 3-4-plo brevioribus.—Foliola ultima 3-4 poll. longa 2-2½ poll. lata. Flores fere I. *rubiginosæ* sed minores et pedicello demum lineam longo stipitati. Calyx vix 2 lin., corolla 7-8 lin. longa. Legumen in specimine huc ut videtur pertinente crassissimum, falcatum, tomento brevissime ferrugineum, faciebus a marginibus omnino obtectis.—Brasil, *Sello*, in flower; Rio Janeiro, *Miers*, in fruit.

108. I. *acutifolia*, ramulis petiolis pedunculisque ferrugineo-tomentosis, petiolo inter paria alato, foliolis oblongis v. oblongo-lanceolatis acutis parce hirtellis supra nitidulis, spicis elongatis breviter pedunculatis, calycibus campanulatis subsessilibus tomentosis, corolla calyce dimidio longiore.—Foliola ultima 4-6 poll. longa, 1¼-1¾ poll. lata. Spicæ 2-3-pollicares, interrruptæ. Bracteæ lato-ovatæ, caducissimæ. Calyx 3½ lin. longus. Corolla 5 lin. longa, pilis crispulis dense vestita.—Pernambuco, *Gardner*, n. 985.

alatus. Glandulæ scutellæformes. Ramuli, petioli, pedunculi et nervi foliolorum in omnibus pube ferruginea, brevi v. velutina, vestiti.—The species of this series are all very much alike in foliage, and the characters derived from the inflorescence, the form and length of the calyx, &c., are often scarcely tangible, yet the pods are frequently so very dissimilar that where they are not known, I have been afraid to unite plants under one species in cases where the differences appear but very slight.

***Calyce sessili tubuloso v. turbinato-tubuloso,* 5-7 *lin., rarius* 4 *lin. longo.*

110. I. *vera* (Willd. Spec. 4, p. 1010), pube tenui, foliolis 4-5 jugis obovali-v. elliptico-oblongis acuminatis, spicis oblongis v. interruptis paucifloris, bracteis parvis ovatis, calyce tubuloso ad duas tertias corollæ attingente, legumine tereti sulcato.—Foliola quam in affinibus tenuiora, majora 4-5 poll. longa, 2 poll. lata, pube brevissima scabriuscula, supra nitidula. Calyces 6-7 lin. longi. Corolla fere 9 lin. longa.—Jamaica, *Wright, Purdie;* Haiti, *Ehrenberg.* This is, according to Vogel, the species preserved in Willdenow's herbarium, and supposed by him to be the *Mimosa Inga* of Linnæus, but it is probable that Linnæus included under that name all those of this series which were known to him.

111. I. *eriocarpa,* pube ferruginea densa, foliolis 5-jugis obovali-v. elliptico-oblongis vix acuminatis, spicis interruptis paucifloris, bracteis parvis ovatis, calyce amplo tubuloso ad duas tertias corollæ attingente, legumine subtereti sulcato dense tomentoso.—Vix I. *veræ* varietas, etsi forma foliolorum similis. Foliola demum subcoriacea, utrinque velutino-pubescentia. Flores magnitudine I. *veræ,* sed crassiores.—Mexico, between San Blas and Guadalaxara, *Coulter.*

112. I. *spuria* (Willd.? Spec. 4, p. 1011), pube ferruginea densa, foliolis 5-6-jugis oblongis acuminatis supra brevissime pubescentibus subtus hirtellis, spicis oblongis v. interruptis paucifloris, bracteis linearibus caducissimis, calyce tubuloso quam dimidium corollæ subbreviore, legumine tereti sulcato.

—Foliola iis I. *veræ* subsimilia v. angustiora, molliora; pube densiore, supra raro nitida; rhachis longior. Calyces in altero specimine vix. 5 lin., in altero fere 6 lin. longi. Corolla 10-11 lin. longa.—British Guiana, *Schomburgk*, *2nd. Coll.* n. 831 (1423). These specimens agree well with Kunth's description, but scarcely so with Willdenow's.

β? *sordida*, foliolis majoribus obovato-oblongis subcoriaceis ultimis sæpe semipedalibus, corolla minore vix 9 lin. longa. Bracteæ I. *spuriæ*. Legumen ignotum. An species propria? An I. *Cumingianæ* var.?—Brasil, *Sello*.

113. I. *Cumingiana*, pube brevi subferruginea, foliolis ovali- v. oblongo-ellipticis acutiusculis utrinque scabro-pubescentibus, pedunculis elongatis supra medium interrupte floriferis, bracteis linearibus diu persistentibus, calycibus tubulosis dimidium corollæ aureo-villosissimæ æquantibus. —Affinis videtur I. *spuriæ*. Foliola lætevirentia, majora 4-6 poll. longa, 2 poll. lata. Pedunculi cum spica 3-5-pollicares. Bracteæ calyce breviores. Calyx 5 lin. Corolla 9-10 lin. longa.—Lima, *Cuming*, n. 980; Bolivia, *Pentland*.

114. I. *xalapensis*, pube densa, foliolis 5-jugis oblongis acuminatis, spicis oblongis, bracteis lanceolatis diu persistentibus calyces æquantibus, calyce tubuloso v. tubuloso-campanulato ad duas tertias corollæ attingente.—I. *spuriæ* affinis,

flores diversi. Petioli sæpius a basi alati, dum in speciebus præcedentibus sæpius infra par infimum nudi sunt. Calyces arcte sessiles, 6 lin. longi, basi attenuati. Corolla 8-9 lin. longa.—Common on the Uruguay, *Tweedie.*

117. I. *insignis* (Kunth. Mim. p. 43, t. 13) ramulis petiolis pedunculis costisque foliolorum hirto-tomentosis, foliolis 5-jugis ellipticis acuminatis coriaceis glabris nitidis, spicis oblongis densis, bracteis oblongo-spathulatis calyces æquantibus, calyce turbinato-tubuloso hirto-pubescente quam corolla sericea duplo breviore, legumine quadrangulari lignoso-tomentoso.—Between Quito and Puembo, *Humboldt* and *Bonpland.* Unknown to me.

118. I. *pachycarpa,* pube ferruginea velutina, foliolis 4-5-jugis ovali- v. oblongo-ellipticis acuminatis coriaceis nitidulis utrinque hirtis, spicis ovatis densis, bracteis lanceolatis calyce brevioribus, calyce turbinato-tubuloso ferrugineo-velutino dimidium corollæ hirsutissimæ superante, legumine quadrangulari lignoso tomentoso.—Pluribus notis cum descr. I. *insignis* convenit, sed multo villosior. Foliola majora, ultima 4 poll. longa, 2 poll. lata. Bracteæ breviores, caducissimæ. Calyx 5-6 lin., corolla 10-11 lin. longa. Legumen semipedale v. longius, 9 lin. latum et crassum, lateribus sulcatis, faciebus concavis non obtectis.—Puente de Guapulo, near Quito, Loxa, and Cuenca, *Hartweg,* n. 966; but as I have not seen specimens from all these localities, it is possible that some may refer to the true I. *insignis.*

***Calyce pedicellato subcampanulato, raro 4 lineas excedente.*

119. I. *laxiflora,* pube densa rufo-velutina, foliolis 5-jugis oblongo-ellipticis acuminatis utrinque hirtellis demum nitidulis, pedunculis elongatis supra medium interrupte floriferis, bracteis parvis oblongo-linearibus caducis, calyce pedicellato tubuloso-campanulato velutino quam dimidium corollæ villosissimæ breviore.—Pluribus notis cum descr. I. *ornatæ* convenit, sel inflorescentia diversa. Foliola majora 5 poll. longa, 1½ poll. lata. Pedunculi cum racemo 6-8 poll. longi. Flores inferiores distantes. Pedicelli 1-2 lin. longi. Flores

crassiusculi. Calyx laxus, 4 lin., corolla 9 lin. longa.—Sesuya, in Peru, *Mathews*, n. 3274.

120. I. *ornata* (Kunth, Mim. 46. t. 14); ramulis petiolis pedunculisque hirto-tomentosis, foliolis 5-jugis oblongis acutis subcoriaceis supra pubescentibus subtus canescentibus et hirsuto-pubescentibus, spicis oblongis densis, bracteis caducis, calycibus pedicellatis campanulatis corollæ sericeo-villosæ dimidium æquantibus, legumine longissimo sulcato.—Foliola majora 5½ poll. longa, 2 poll. lata. Spica v. racemus bipollicaris, densiflorus, in pedunculo pollicari. Calyx 4 lin., corolla 8 lin. longa. Legumen 3-4-pedale.—Between Buga and Carthage, *Humboldt* and *Bonpland*. Unknown to me.

121. I. *Bahiensis*, pube brevi ferruginea, foliolis 5-6-jugis ovali-ellipticis oblongisve acuminatis utrinque hirtellis supra nitidulis, spicis brevibus oblongisve pedunculatis, bracteis ovatis brevibus, calycibus brevissime pedicellatis campanulatis corolla subtriplo brevioribus.—Foliola ultima 4-8 poll. longa, 1½-2½ poll. lata. Alæ petioli latæ. Pedunculi 1½-3-pollicares, apice breviter floriferi, floribus primum subcorymbosis demum parum distantibus. Calyx 3 lin., corolla 9 lin. longa. Legumen tomentosum, marginibus valde dilatatis at facies non obtegentibus.—Bahia, *Blanchet*, n. 1016 and 1017.

ticis acuminatis v. rarius obtusis demum supra nitidulis spicis oblongis, bracteis brevibus caducis, calyce sessili velutino quam corollæ sericeo-villosissimæ dimidium breviore, legumine subplano latissime marginato velutino-tomentoso. —Mimosa dulcis, *Vell. Fl. Flum.* 11, t. 4.—Inga dulcis, *Mart. Herb. Bras.* p. 113.—I. Arrabidæ, *Steud. Nom. Bot. ed.* 2. —Mimosa umbellata, *Vell. Fl. Flum.* 11, t. 12.—Inga Vellosiana, *Mart. Herb. Bras.* p. 114.—Folia I. *eriocarpæ*, I. *xalapensis* et I. *Uraguensis.* Foliola raro 4 poll. excedunt. Calyces 3-3½ raro 4 lin. Bracteæ ovatæ v. orbiculatæ. Legumen 6-9 lin. latum marginibus sulcatis et undulatis facies non obtegentibus. Species a collectoribus sæpe missa, variat foliolorum forma, pube, &c.—Rio Janeiro, *Guillemin*, n. 273, *Gardner*, n. 201; Brasil, *Pohl*, *Claussen*; Porana and Buenos Ayres, *Tweedie.*

124. I. *ornifolia* (Humb. et Kunth, Nov. Gen. et Sp. 6, p. 291), ramulis hirto-tomentosis, foliolis 5-jugis lanceolato-oblongis utrinque molliter pilosis supra subnitidis, legumine compresso densissime hirto-tomentoso margine valde incrassato sulcato et undulato.—Near Quito, *Humboldt* and *Bonpland.* Probably very near to I. *affinis*, but unknown to me.

125. I. *velutina* (Willd. Spec. 4, p. 1014), from Para, is said by De Candolle to differ chiefly from I. *affinis* by the larger leaflets. It must also be very near I. *edulis*. Specimens gathered by Purdie at St. Martha may possibly be the same, but they are only in young fruit without flowers.

126. I. *edulis* (Mart. Herb. Bras. p. 113), pube ferruginea brevi, foliolis 4-5-jugis oblongo- v. ovali-ellipticis acuminatis membranaceis, pedunculis fasciculatis, spicis oblongis, floribus tenuibus sessilibus, bracteis lanceolatis, calyce tubuloso-campanulato corolla subtriplo breviore, legumine tenuiter tomentoso longo subtereti, sulcato.—Mimosa Yuga *Vell. Fl. Flum.* 11, t. 3. Foliola multo majora quam in I. *affinis* et vulgo tenuiora, sæpe semipedalia. Pedunculi 1-1½ pollicares. Spicæ breves subinterruptæ. Flores quam in præcedentibus multo tenuiores. Calyx 2-2½ lin., corolla 7 lin. longa. Legumen sæpe pedale v. longius, vix semipol-

licem diametro, marginibus facies omnino obtegentibus.—Brasil, *Pohl.*

127. I. *fasciculata* (Pœpp.! et Endl. Nov. Gen. et Sp. 3, p. 79), pube ferruginea velutina, foliolis 4-jugis ovalibus v. elliptico-oblongis supra pubescentibus subtus ferrugineo-villosulis, spicis pedunculatis fasciculatis oblongis, bracteis parvis ovatis, calyce tubuloso-campanulato tomentoso quam corollæ sericeo-villosæ dimidium breviore, "legumine lineari lato plano demum glabro."—Folia iis I. *eduli* similia v. magis coriacea et pubes copiosior. Inflorescentia eadem, pedunculis per 6-9 fasciculatis, nec differunt flores nisi minores (5 lin. longi). Legumen tamen a Pœppigio descriptum (a me non visum) diversissimum est, 6-8 poll. longum, 1 poll. latum et potius *Pseudingæ* quam *Euingæ*. An revera in eodem arbore lectum?—Subandine woods of Peru, near Cuchero, *Pœppig.*

128. I. *conferta*, pube tenui, foliolis 5-6-jugis ovali-ellipticis oblongisve acuminatis tenuiter puberulis, spicis pedunculatis fasciculatis superioribus corymboso-confertis singulis oblongis, bracteis ovato-lanceolatis, calyce tubuloso-campanulato tomentoso dimidium corollæ sericeo-villosæ æquante.—Affinis I. *fasciculatæ*. Foliola numerosiora, pleraque semipedalia, 2 poll. lata. Pedunculi inferiores interdum

—Province of Jaen de Bracamoras, *Humboldt* and *Bonpland*. Perhaps near I. *scabriuscula*.

131. I. *thyrsoidea* (Desv. Journ. Bot. 1814, 1, p. 71), foliolis trijugis ovatis glabris subtus venosis, petiolo subnudo apice articulationum subalato, ramis angulatis cinereis, floribus thyrsoideis.—Guiana.

132. I. *Thibaudiana* (DC. Prod. 2, p. 434), foliolis 4-5 jugis ovato-oblongis acuminatis superne, nervo excepto glabris, subtus petiolis pedunculis calycibusque pubescentibus, petiolo apice alato basi nudo, spicis subgeminis oblongis ad apicem ramorum subpaniculatis, corollis sericeo-pubescentibus.—Corollæ tenues, 7 lin. longæ. Stamina rubra, exserta.—Cayenne, *Herb. Thibaud.*

133. I. *gladiata* (Desv. in Ann. sc. Nat. Ser. 1, v. 9, p. 427) foliolis 4-jugis oblique ovatis abrupte acuminatis supra subasperis subtus rugoso-pubescentibus, glandulis maximis cupuliformibus, spicis brevibus axillaribus breviter pedunculatis, leguminibus compressis falcatis aureo-pubescentibus falcatis rostratis.—Guiana.

134. I. *rhoifolia* (Willd. Enum. p. 1046), petiolo alato foliolis 5-jugis oblongis acuminatis supra hirtis nitidis subtus villosis, ramis ferrugineo-tomentosis.—Brasil. The above character, taken from a plant not yet in flower, will apply to many of the *Euingæ Veræ*, as well as to several species of other sections.

I. *nodosa*, Willd. Spec. 4, p. 1016, or *Mimosa nodosa*, Linn., is *Cassia bacillaris*.

I. *cognata*, Schlecht. Linnæa 12, p. 560, has the leaves really bipinnate, with one pair of pinnæ and the common petiole so short that the leaves appear at first sight to be simply pinnate. It is a *Pithecolobium* very near P. *glomeratum*.

I. *ramiflora*, Steud. Flora 1843, p. 759, is *Pithecolobium lasiopus*; I. *trapeziformis*, Steud. l. c. is *Pithecolobium corymbosum*; I. *pubiramea*, Steud. l. c. is unknown to me; the plant I have from Hostmann under n. 171 is my *Calliandra Surinamensis* with which Steudel's character does not agree.

I. *bauhiniæfolia*, Pœpp. et Endl. Nov. Gen. et Sp. 3, p. 80, is my *Calliandra amazonica*. I. *læta*, Pœpp. et Endl. l. c., is my *Pithecolobium lætum*, to which I have also referred the specimens in fruit, described by Pœppig under the name of *Pithecolobium polycarpum*.

(To be continued.)

Contributions towards a FLORA OF SOUTH AMERICA: *Enumeration of Plants collected by* SIR ROBERT SCHOMBURGK, *in British Guiana.*—*By* GEORGE BENTHAM, ESQ.

(Continued from Vol. II. *p.* 674.)

POLYGONACEÆ.

The genera of this order have been well arranged by C. A. Meyer in a paper published in the Transactions of the Academy of Sciences of St. Petersburgh, and several portions of the order have been worked up with considerable ability by Meissner, yet there remains much to be done by the monographist who shall undertake the task for the Prodromus, and who it is generally understood is to be Dr. Meissner himself. The further division of the extensive genus *Polygonum* will probably not be carried beyond the are to be met with in fruit, and it is that organ which appears to present the most remarkable variations. In some species, the achenium is entirely included in the enlarged fleshy tube of the perigon, whilst the lobes are scarcely altered, and persist in the form of a crown at the summit of the fruit, like the calyx of *Rubiaceæ* and other orders with adherent calyxes or so-called inferior fruits. In other species the whole perigon becomes fleshy and scarcely covers the achenium, the upper part of which is more or less free; and in some cases the ovary and fruit, instead of being sessile at the base of the perigon, are born upon a more or less evident fleshy support. I have not seen the fruit of a sufficient number of species to ascertain whether these differences correspond with the variations observable in the venation of the leaves, the inflorescence or flowers, and what importance may therefore be attributable to them; but I have ventured, in the Botany of the Voyage of the Sulphur, to propose under the name of *Campderia*, a new genus for a plant, in which the perigon does not appear to become fleshy at all, but encloses an almost dry achenium supported on a thick fleshy stalk, although the general habit of the plant be that of several *Coccolobæ*. In many species of *Coccoloba* the ovary is abortive in several flowers, but I have never observed any deficiency in the stamens, and this partial polygamous disposition appears to be of very little importance.

Among the *Triplarideæ*, the two genera *Triplaris* and *Ruprechtia* are very appropriately distinguished by Dr. Meyer. In both of them the arrangement of the stamens in the male flowers is the same as in other regular hexamerous enneandrous *Polygoneæ*, and does not appear to me to have been quite correctly described in Endlicher's Genera. I always find one stamen opposite to each *inner* segment, and one close on each side of it; so that when the flower is fully expanded, there is a larger interval opposite to each outer segment of the perigon, as represented in *Eriogonum compositum*, Linn. Trans. v. 17, pl. 17, fig. 10, e. Precisely the same number and arrangement is observable in the minute abortive stamens in the female flowers of some *Ruprechtiæ*. The additional genus, *Symmeria*, here proposed, with polyandrous male flowers, is a singular anomaly amongst *Polygonaceæ*.

The near relationship of *Brunnichia* and *Antigonon* are more fully referred to in the Botany of the Voyage of the Sulphur, p. 47.

847. Polygonum *acuminatum*, *Humb. et Kunth. Nov. Gen. et Sp. 2, p.* 178, var. fere glabrum, ciliis vaginarum paucis.—In the water along the upper Essequibo, *Schomburgk*, 1st Coll. n. 870.

848. Coccoloba *grandis*, sp. n., glaberrima, foliis amplissimis obovato-orbicularibus obtusissimis basi vix emarginatis subbullatis venis supra impressis, paniculæ ramis elongatis gracilibus, bracteis minutis, pedicellis perigonio brevioribus, perigonii tubo lobis multo breviore, bacca lobos perigonii æquante.—Arbor 30-pedalis, cortice sulcato. Ramuli crassi, concavi. Vaginæ amplæ, laxæ, striatæ, 1-2 poll. longæ. Folia majora sesquipedalia, ultra pedem lata, apice nunc breviter et obtuse acuminata, nunc obtusissima, infra medium angustata, basi obtuse v. leviter cordata, glabra, lævia at leviter bullata, costa media venisque majoribus primariis

acuminatis basi rotundatis cordatisve supra glabris v. ad venas impressas puberulis, subtus ferrugineo-pubescentibus, racemis folio brevioribus, pedicellis perigonio sublongioribus bracteam vix æquantibus, perigonii tubo lobis multo breviore. — Caulis lignosus, super arbores alte scandens. Ramuli juniores ferrugineo-pubescentes, demum glabrati verrucosi. Vaginæ breves. Folia pleraque 6-8 poll. longa, 4-5 poll. lata, petiolo subsemipollicari, nonnulla tamen multo minora, omnia subcoriacea, supra siccitate nigricantia et venis exceptis glabra, subtus pube brevi ferruginea vestita, nervis reteque majore venarum valde prominentibus. Racemi laxiusculi, secus ramos ad axillas foliorum delapsorum, v. in axillis foliorum subfasciculati, 2-3-pollicares, flexuosi, a basi floridi. Bracteæ exteriores demum 1 lin. longæ, a basi membranaceæ, truncatæ, extus minutissime puberulæ. Flores plerique abortu masculi, nonnulli tamen in iisdem racemis hermaphroditi. Perigoinum lineam longum, laciniis 5 rotundatis subæqualibus, tubus brevis carnosus, cum disco staminifero connatus. Stamina 8, in omnibus floribus tam hermaphroditis quam masculis consimilia, nec unquam abortiva videntur. Ovarium in floribus hermaphroditis sessile, obtuse trigonum, superne attenuatum. Styli apice leviter incrassati, vix capitati, tenuiter papillosi, et forte flores quos vidi non vere fertiles sunt, etsi ovulum adest, ut videtur perfectum. Ovarium in floribus masculis minimum est v. omnino evanescit.—British Guiana, *Schomburgk*, 1st Coll., n. 400, 2nd. Coll. n. 218, (128).*

In Forsyth's herbarium, I found, under the name of C. *scandens*, an imperfect specimen of a plant gathered by Anderson in Saint Lucia, very much like the above, but with the leaves perfectly smooth, the racemes much longer, and the bracts very small. These are the only two species as yet known to be climbers.

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* The plants of the 2nd Collection were many of them gathered by Mr. Richard Schomburgk, brother of Sir Robert, who accompanied him on account of the Royal Herbarium, Berlin, and the numbers inserted *last* on the labels or *within a parenthesis*, are those given to these specimens in the Berlin collection.

850. C. *parimensis*, sp. n., arborescens, glaberrima, foliis ovatis breviter acuminatis basi rotundatis cordatisve, venis majoribus supra impressis, racemis folio brevioribus, pedicellis perigonio longioribus bracteas vix æquantibus, perigonii tubo lobis multo breviore.—Inflorescentia, bracteæ, flores et foliorum forma C. *excelsæ*, sed arbor est parva vel frutex elatus non scandens, et præterea differt glabritie. Folia majora 6-7 poll. longa, 4-5 poll. lata. Ovarium in floribus quos examinavi semper adest, sed styli rami vix apice capitati, nec sæpius distincte papillosi.—Rio Parime, *Schomburgk*. *Hostmann's* n. 245, from Surinam, may possibly be a variety of the same species.

851. C. *marginata*, sp. n., glabra, foliis obovali-oblongis breviter acuminatis basi obtusis, venis majoribus supra impressis, marginibus anguste sursum involutis, racemis folio brevioribus, pedicellis perigonio bracteisque brevioribus, perigonii tubo lobis multo breviore.—Folia pleraque 4-5 poll. longa, 2-2½ poll. lata, chartacea, venis majoribus subtus prominentibus, rete venularum tenui. Racemi 5-10-pollicares, graciles. Bracteæ latæ, vix semilinea longiores. Flores C. *excelsæ*.—British Guiana, *Schomburgk*, 2nd Coll. n. 148 (216).

The singular manner in which the margin of the leaves is turned back upon the upper surface to the breadth of about laciniis ovatis. Stamina parva. Styli subulati, apice breviter incrassato-stigmatosi. Bacca junior tubo calycis adnato inclusa, lobis persistentibus apice coronata, maturam non vidi.—British Guiana, *Schomburgk*, 2nd Coll. n. 929 (1265).

853. C. *ovata*, sp. n., glaberrima, foliis ovatis utrinque obtusis tenuiter coriaceis utrinque reticulato-venulosis, racemis folio longioribus rigidulis, pedicellis perigonio bracteaque multo brevioribus, perigonii laciniis tubo suo longioribus, staminibus exsertis.—Frutex ramosissimus, ramorum cortice lævi. Ramuli juniores sub foliis striatuli. Vaginæ atro-membranaceæ, truncatæ, 2-3 lin. longæ, hinc fissæ. Folia latitudine valde variabilia, pleraque 2-3 poll. longa, 1½-2 poll. lata, utrinque lucida, rigida, insigniter reticulata, siccitate fuscescentia. Racemi 4-6-pollicares, fere a basi floriferi. Bracteæ subtendentes carinatæ, lineam longæ, margine angustius scariosæ quam in speciebus affinibus. Perigonium patens, tubo brevi carnoso, laciniis fere lineam longis, orbiculatis. Styli apice capitato-stigmatosi.—On the Essequibo and Rupununy, and on the Rio Negro in North Brasil, *Schomburgk*, 1st Coll. n. 531 and 893.

This species appears to have an extensive range, if specimens which I have from various parts of tropical Brasil and from the West Indies are, as they appear to be, referrible to it. It agrees in many respects with the characters given of C. *obtusifolia*, Jacq., but the leaves, though variable in form, are never so narrow as those described by Jacquin; nor does the inflorescence agree at all with that attributed to the C. *microstachya*, Willd., which is said to differ chiefly from C. *obtusifolia*, by its broader leaves.

854. C. *lucidula*, sp. n., ramulis ferrugineo-puberulis mox glabratis, foliis oblongis subobovatisve acuminatis tenuiter subcoriaceis utrinque reticulato-venosis glabris nitidulis, racemis folio plerisque brevioribus, perigonii subsessilis laciniis tubo suo longioribus, staminibus perigonium æquantibus.—Ramuli tenues, teretes, cortice cinereo. Vaginæ puberulæ, oblique truncatæ, 3-4 lin. longæ, angustæ. Petioli vaginis breviores, raro 2 lin. longi. Folia 2½-3½ poll. longa,

1-1½ poll. lata, rigidula sed tenuiora quam in C. *obovata*, acumine longiore v. breviore acuto v. obtusiusculo, basi rotundata v. cuneata; venatio C. *obovatæ* sed folia utrinque nitidiora. Racemi 1½-2-pollicares, floribus numerosis parvis. Bracteæ non scariosæ, parvæ, uti rhachis tenuissime tomentellæ. Perigonii laciniæ patentissimæ, tubo cum disco staminifero leviter carnoso. Styli breves apice capitato-stigmatosi.—British Guiana, *Schomburgk*, 2nd Coll. n. 947 (1262).

855. Triplaris *Vahliana, Fisch. Mey. ex C. A. Mey. Bemerk. Polyg. p.* 14.—British Guiana, *Schomburgk*, 2nd Coll. n. 880 (1522).

856. T. *surinamensis*, Cham.—C. A. Mey. l. c., var. crassifolia.—On the Creek Longjohn, on the upper Essequibo, *Schomburgk*, 1st Coll. n. 223.

The tufts of hairs in the axils of the veins on the under side of the leaves are often very small, and in many leaves disappear altogether, and the inner lobes of the perigon in the female flowers and fruit are but shortly adherent to the tube; yet I can perceive no essential difference between these specimens and Hostmann's n. 439 and 1188 from Surinam, and Martin's Cayenne specimens, which I consider to belong to the true T. *surinamensis*. The inner segments of the perigon in the flower are lanceolate-subulate, as

longæ, latæ, concavæ, longe ciliatæ. Flores subsessiles. Perigonii tubus abbreviatus, limbus rotato-expansus, 1½ lin. diametro, laciniis parum inæqualibus obovato-oblongis apice extus barbatis. Stamina breviter exserta. Panicula fœminea (unica quam vidi) multo minor, pariter hirsutissima. Bracteæ exteriores acuminatæ, 4 lin. longæ, antice per anthesin more generis apertæ. Perigonium bracteam æquans, hirsutissimum; laciniæ exteriores oblongæ, tubo suo vix longiores; interiores ad basin tubi insertæ, ovario appressæ, tubum perigonii æquantes. Styli rami perigonium subæquantes, acuti, fere a basi papilloso-hirti. Fructus non vidi.—British Guiana, *Schomburgk*, 1st. Coll. (not numbered).

858. Ruprechtia *tenuiflora*, sp. n., foliis lanceolatis glabris, perigonii fructiferi breviter pedicellati minute puberuli laciniis exterioribus linearibus v. anguste oblongis quam achænium dimidio saltem longioribus.—Arbor parva, ramulis brevibus teretibus. Vaginæ stipulares breves, caducissimæ. Folia breviter petiolata, maxima 4-5 poll. longa, 2 poll. lata, pleraque tamen 2-3 poll. longa, 6-10 lin. lata, acuta v. obtusiuscula, basi angustata, tenuiter coriacea, supra interdum nitidula, venis tamen utrinque conspicuis, glaberrima nisi primo juventute pilosiuscula. Racemi compositi, folio breviores, uti flores breviter tomentoso-pubescentes. Flores masculi secus ramos inflorescentiæ fasciculati, bracteis minimis suffulti. Pedicelli lineam longi cum flore decidui. Perigonium patens, 6-partitum, segmentis late ovatis extus puberulis obtusis lineæ paullo brevioribus, interioribus vix minoribus. Stamina 9, exserta. Flores fœminei secus ramos solitarii v. per 2-8 fasciculati. Bracteæ iis maris similes. Pedicelli ejusdem longitudine nec in fructu accreti. Perigonium viridi-flavescens, pubescens, tubo brevissimo trigono-turbinato; laciniæ exteriores lineares 1½ lin. longæ; interiores setaceæ, dimidio breviores. Staminum rudimenta minuta, vix nisi ope lentis perspicua. Ovarium perigonio brevius, oblongo-trigonum, pubescens, angulis laciniis exterioribus perigonii oppositis. Stigmata 3, linearia, acuta, divergentia, fere a basi papilloso-hirta. Perigonii fructiferi tubus brevis,

obtuse trigonus, laciniis exteriores cum angulis tubi continuæ, 6 lin. longæ, 1 lin. latæ, crassiusculæ, molliter et tenuiter puberulæ, aveniæ; 3 interiores setiformes, 1 lin. longæ. Capsula oblonga, superne attenuata, 3-4 lin. longa, stylorum vestigiis coronata, trisulca, sulcis laciniis interioribus perigonii oppositis, intus sulcis intromissis semitrilocularis. Semen e basi cavitatis erectum, stipitatum, profunde trisulcum.—Pedrero, on the Rio Negro, *Schomburgk*, 1st. Coll. n. 924, (female specimens), and n. 957, (male specimens).

The above species resembles R. *salicifolia* in the shape of the leaves, but the habit is much more rigid, and the perigon, especially when in fruit, very different in shape.

859. R. *brachystachya*, sp. n., foliis ovatis oblongis sublanceolatisve, perigonii fructiferi subsessilis minute pubescentis laciniis ovato-oblongis achænium æquantibus v. vix superantibus.—Specimina quæ vidi deflorata sunt, fructibus plerisque fere maturis. Rami breves, ramosissimi. Folia latiora et obtusiora quam in R. *tenuiflora*, in uno specimine pleraque 1-1½ poll. longa, 6-9 lin. lata, in altero 2-3 poll. longa, 1-1½ poll. lata. Fructus in racemis brevibus conferti. Bracteæ minutæ. Perigonium basi in pedicellum brevissimum longe attenuatum, 6 lin. longum, tubo incluso trigono sesqui-lineari, molliter at brevissime pubescens, laciniis exterioribus concavis obtusis medio 2 lin. latis, interioribus setaceis dimidio

exterioribus parvis, angulis ovarii oppositis, 3 interioribus duplo majoribus faciebus ovarii arcte adnatis. Ovarium triquetrum. Stigmata 3, sessilia, brevia, lobata. Perigonii fructiferi laciniæ interiores valde auctæ membranaceo-foliaceæ fructui acutissime triquetro arcte adnatæ. Pericarpium tenue. Semen triquetrum, ruminato-rugosum. — S. *paniculata*, species unica. Arbor habitu *Triplaridi* affinis. Ramuli juniores ferrugineo-tomentosi, mox glabrati. Petioli dilatati, breviter vaginantes, semipollicares ad pollicares. Folia ovalia v. oblongo-elliptica, 6-10 poll. longa, 2-4 poll. lata, apice obtusa, margine integerrima, basi obtusa v. leviter cordata, glabra, rigide membranacea, costa media venisque parallelis subtus prominulis, rete venularum vix conspicuo. Panicula mascula pedalis, divaricato-ramosa, ferrugineo-tomentella. Flores parvi, secus ramos graciles per 3-5 glomerati, glomerulis inter se distantibus bracteis minutis suffultis. Pedicelli perigonio breviores. Perigonii laciniæ interiores vix lineam longæ. Stamina ultra 20, perigonium subæquantia; antheræ majusculæ, breviter oblongæ, biloculares. Panicula fœminea mari brevior, confertior. Inflorescentia eandem legem sequitur, pedicellis tamen proportione longioribus. Perigonii laciniæ interiores ab ovario non separabiles, 1 lin. longæ. Fructus (nondum maturus) cum perigonii laciniis interioribus auctus, in specimine 7 lin. longus, triquetro-pyramidatus, angulis subalatis, faciebus prope basin 4-5 lin. latis, laciniis perigonii summo apice brevissime liberis, cæterum arcte adnatis; laciniæ exteriores sub angulis horizontalibus persistentes et iis dimidio brevioribus. Pericarpium tenue stigmatum vestigiis coronatum. Semen jam formam illius *Triplaridis* sumere incipit.

THYMELEACEÆ.

The genera of this order, as usually characterised, were in the greatest confusion, very unnaturally marked out by characters often of very little importance. Dr. Meisner has lately reduced to their proper limits the South African and some of the Asiatic genera, and it is to be hoped that he will

revise the whole order for the Prodromus. In the meantime, Dr. C. A. Meyer, in the Bulletin of the Academy of St. Petersburgh, has proposed a generic distribution which appears very satisfactory with relation to the European, Asiatic, and a portion of the American species, but which may require some modification as to the latter, when more of them shall have been examined. *Nordmannia*, for instance, (if I am not right in the plant I consider to be N. *tinifolia*), well distinguished by the stamens adnate to the lobes of the corolla, is, by the more or less complete abortion of the organs of one sex, usually diœcious, not truly hermaphrodite, and has small scales round the base of the ovary. It is a natural genus, containing at least half-a-dozen American species, including *Daphne salicifolia*, H.B.K., D. *cestrifolia*, H.B.K., D. *Bonplandiana*, Kunth, (vix Cham. Schlecht)* and some unpublished species. The only species of the order contained amongst Schomburgk's plants, belong to genera perfectly distinct from any I am acquainted with.

861. Lasiadenia *rupestris*, gen. nov.—Rocks at Pedrero, on the Rio Negro, 1st Coll. n. 899.

Char. Gen. LASIADENIA. Perigonii tubus tenuis; limbi lobi 5, patentes; faux esquamata. Stamina 10, quarum 5 in medio tubo, 5 infra faucem inserta, omnia inclusa; antheræ

acuta v. obtusa: basi rotundata v. truncata, supra sparse et appresse pilosa, subtus pube subsericea pallentia v. candicantia. Pedunculi terminales, a folio terminali 2-6 lin. longi, canescenti-tomentosi, graciles, apice capitulum ferunt 3-6 florum, bractea parva subulata subtensum. Flores sessiles, albi. Perigonii tubus semipollicaris, leviter incurvas, tenuis, canescenti-tomentosus, 10-striatus, intus glaber; limbi lobi lanceolati, 3 lin. longi, extus dense intus tenuius cano-tomentosi. Squamulæ hypogynæ minutæ, longe barbato-hispidæ. Ovarium in fundo perigonii 1 lin. longum. Stylus ovario brevior.

862. Goodallia *guianensis*, gen. n.—On the brook Carassawaka, a tributary of the Rupunoony, *Schomburgk*, 1st Coll. n. 142, in part.

Char. gen. GOODALLIA. Flores dioici: Masculi: Perigonium late tubulosum 5-fidum, tubo intus villoso, limbo erecto. Stamina 10, ad faucem inserta, perigonio breviora, 5 lobis alterna paullo breviora. Squamæ perigynæ prope basin tubi 10, lineares, glabræ. Ovarii rudimentum nullum v. minimum. Fœminei: Perigonium et squamæ perigynæ marium. Stamina nulla. Squamulæ hypogynæ minutissimæ longe hispidæ. Ovarium hirsutissimum. Stylus filiformis, brevis, apice dilatatus, in stigma crassum capitatum undique papillosum. Ovulum unicum, ex apice cavitatis pendulum. Fructus vix carnosus, perigonio parum aucto inclusus, ovoideus, apice attenuatus, hispidus. Semen pendulum, fructu conforme; testa crustacea; albumen nullum; radicula supera; cotyledones crassæ convexæ.—G. *guianensis*. Frutex elatus, ramis divaricatis ramosissimis, ramulis ultimis tenuibus, novellis sericeo-pilosulis, mox glabris puncticulatis. Folia in petiolo vix unquam lineam longo pollicaria v. paullo minora, 7-9 lin. lata, basi cuneata v. rotundata, margine integerrima, consistentia et colore illa *Maprouneæ* referentia, glaberrima, penninevia, venis utrinque prominulis sæpe purpurascentibus. Spicæ capitulæformes ad apices ramulorum sessiles, fœmineæ 3-5-floræ, masculæ interdum 6-7-floræ. Perigonium masculum 2½ lin. longum, laciniis lineari-lanceolatis tubum æquantibus extus uti tubus sericeo-canescentibus, intus glabrioribus; tubus intus sub fauce hirsutissimus, basi glabrior sed ima basi iterum hirsutus. Perigonium fœmineum masculo paullo majus, basi intus circa ovarium pilorum fasciculos 5 fovens e squamulis minutis ortos. Stamina marium glaberrima, antheris erectis adnatis bilocularibus, loculis longitudinaliter dehiscentibus. Ovarium tubo perigonii fœminei paullo brevius, stylo tubum breviter excedente. Perigonium fructiferum vix 4 lin. longum.

The only genus to which this one comes at all near in character is *Lagetta*, from which it is amply distinguished by the pentamerous flowers perfectly diœcious, and other characters, besides a very different habit. I have great pleasure in dedicating it to the distinguished young artist who accompanied Sir Robert Schomburgk in his second expedition, and brought home a beautiful set of views of various palms and other trees in their natural stations, besides many valuable botanical drawings.

863. Goodallia *guianensis*, var.? parvifolia, foliis oblongis ellipticisve obtusis mucronulatis subtus ramulisque sericeo-pubescentibus. — Specimen unicum vidi fœmineum. Ramuli virgati. Folia 4-6 lin. longa, 1½-3 lin. lata, petiolo lineam longo. Perigonia quam in typo majora, longius

attenuatis sessilibus subrepandis supra præsertim secundum costam mediam densissime lineolatis basi ciliatis, costis 7-8 debilibus, subtus hirtulis, verticillis completis paucifloris, calycibus ad medium usque 5-fidis laciniisque subulatis sparsim pilosis.—Differt ab H. *conferta* et H. *salicifolia* foliis haud petioli longi in speciem basi attenuatis, apice etiam minus attenuatis acumineque obtusiori. Proxima sane accedit H. *lacustri*, cauli etiam rubro, sed differt hirsutie, licet sparsa, foliisque brevioribus (2½ poll. longis, 5-6 lin. latis) statu sicco circa costam in pagina superiore tanquam umbra canescente, a lineolis confertissimis orta, suffusis, calyce piloso aliisque. Corolla calyce paullo longior. Capsula fusca. (*Nees*). —British Guiana, *Schomburgk*, 2nd Coll. n. 331 (291).

866. Stemonacanthus *Humboltianus*, Nees ab E., glaber, foliis oppositis ovato-oblongis in acumen angustum obtusum plus minus attenuatis, thyrso terminali nudo, bracteis partialibus brevissimis ovatis, pedicellis calycibusque canescenti-scabris subglandulosis.—Ruellia Humboldtiana, *Klotzsch in Moritz, Pl. Cub.*—var. β. caule rhachique thyrsi tenuioribus foliis laxioribus magisque ovali-oblongis et utrinque acutis, thyrso 1-1¼ poll. longo subsimplici spiciformi, corollis paullo gracilioribus. (*Nees*).—Mountainous region near the Hyacon cataract, *Schomburgk*, 1st. Coll.

867. Dipteracanthus *humilis*, Nees ab E.—Ruellia humilis, *Pohl in herb. Vindob.*—var. β. *diffusus*.—British Guiana, *Schomburgk*, 1st Coll.

868. D. *canescens*, Nees ab E., cano-pubescens, caule herbaceo procumbente adscendente erectove, foliis oblongo-lanceolatis sessilibus obtusiusculis repando-crenatis integerrimisque, floribus axillaribus oppositis solitariis geminisve subsessilibus, bracteolis nullis (aut caducis?) calycis laciniis lineari-subulatis hirsutis, corollæ infundibuliformis tubo fauces amplas obconicas æquante, limbi laciniis ovatis.—A D. *geminiflora* differt pubescentia densiore incana, foliis angustioribus, corollæ faciebus paullo magis inflatis, an var.? Ad basin calycis cicatriculæ lineares transversales bracteolarum sedem prodere videntur, in multis tamen quæ examini sub-

jeci, bracteolam reperire frustra laboravi. (*Nees*).—British Guiana, *Schomburgk*, 1st. Coll. n. 377, 2nd Coll. n. 291 (477).

869. Teliostachya *alopecuroidea*, Nees ab E. — Ruellia alopecuroidea, *Vahl.*—British Guiana; *Schomburgk*, 1st. Coll. n. 555; French Guiana, *Leprieur*, Herb. Par. n. 165.

870. Thyrsacanthus *Schomburgkianus*, Nees ab E., ramis subtetragonis angulis lævibus, racemo terminali elongato longe pedunculato glanduloso-pubescente, floribus distantibus oppositis (inferioribus sæpe geminis ternisve) secundis, pedunculis recurvatis, corollæ tubulosæ limbo brevi.—Differt a T. dissitifloro, *Nees ab E.* corolla pollicari, limbo fere regulari, laciniis ovatis parum patentibus; reliqua congruunt. Folia in utraque stirpe argute cuspidata, variant a longitudine spithamæa ad 3 poll. (*Nees*).—British Guiana, *Schomburgk*, 2nd Coll. n. 157 (110.)

871. Aphelandra *pectinata*, Herb. Willd.—British Guiana, *Schomburgk*, 1st. Coll. n. 180.

872. A. *pulcherrima*, Jacq.—British Guiana, *Schomburgk*, 2nd Coll. n. 109 (38).

873. Beloperone *Schomburgkiana*, Nees ab E., spica terminali composita thyrsoidea imbricata basi foliosa, bracteis lineari-lanceolatis acuminatis bracteolisque linearibus longe

874. Beloperone? *calcyina*, Nees ab E., thyrso terminali denso ramis inferioribus verticillatis, bracteis bracteisque setaceis calyce multo brevioribus, calycis brevipedicellati laciniis lineari-acuminatis longissimis, caule herbaceo glabro, foliis amplis ovali-oblongis cuspidatis in petiolum attenuatis supra glabris nitidisque subtus subtilissime velutinis, antheræ locellis calcaratis (suboppositis et connectivo oblongo discretis). (*Nees*).—British Guiana, *Schomburgk*, 1st. Coll. (single specimen).

875. Rhytiglossa *pectoralis*, Nees ab E.—Justicia pectoralis, *Linn.*—British Guiana, *Schomburgk*, 2nd Coll. n. 176 (141).

876. Leptostachya *Martiana*, Nees ab E.—British Guiana, *Schomburgk*, 1st. Coll. n. 305.

877. Sericographis *caripensis*, Nees ab E.—Justicia caripensis, *Humb. et Kunth.*.—British Guiana, *Schomburgk*, 2nd Coll. n. 190 (134).

878. Amphiscopia *polystachya*, Nees ab E.—Justicia polystachya, *Vahl.*—French Guiana, *Herb. Par.* n. 165.

879. A. *cayennensis*, Nees ab E.—French Guiana, *Herb. Par.* n. 163.

880. Dicliptera ciliaris, *Juss.*—British Guiana, *Schomburgk*, 1st. Coll. n. 192.

(*To be continued.*)

Description of Three Species of Plants from UPPER INDIA, *collected by* DR. THOS. THOMSON, H.E.I.C.S. *and* DR. BACON, H.E.I.C.S. *with three plates.*

(TABS. XX, XXI, *and* XXII.)

1. GENTIANA (Chondrophyllum) *cephalodes*, Edgeworth; "caule filiformi apice foliis paucis capitulum 3-4 florum involucrantibus, capsula breviter stipitata apice rotundata ciliolata emarginata, stylo bifido utrinque reflexo." *Edgeworth in Linn. Soc. Trans. ined.* (TAB. XX, sub nomine G. *Baconi.*)

HAB. Nepaul, *Dr. Bacon*, (in Herb. Thomson); also gathered by *Mr. Edgeworth* on the Himalayah, at an elevation of 5000 feet.

"Annua, 1-2 pollicaris. *Caulis* erectus, teres, basi nudus, apice capitulum parvum 4-5 florum foliis involucratum gerens. *Folia* 4-6, sessilia, late obovata, obtusa, mucronata, interiora minora, decussatim opposita, arcte involucrantia. *Flores* in capitulum sessiles. *Calyx* membranaceus, 5-dentatus, laciniis nervo medio subherbaceo acutis mucronatis corollæ plicis æquantibus. *Corolla* 5-fida, intus nuda, laciniis angustæ acutæ, plicæ integræ, v. 2-3-dentatæ. *Stamina* ad medium tubi inserta, filamentis filiformibus, antheris parvis versatilibus luteis. *Ovarium* breviter stipitatum, cuneato-obovatum, apice stylis brevibus filiformibus liberis utrinque revolutis, stigmatibus apicalibus introrsis extus puberulis. *Capsula* bivalvis, valvis ad medium patentibus reflexis, apice rotundatis emarginatis ciliolatis. *Semina* ovoidea, testa nervis crassiusculis reticulata.—Species distinctissima, affinis videtur G. *marginatæ*." *Edgeworth.*

When the accompanying figure of this plant was prepared, we were not aware of its having been described for the Transactions of the Linnæan Society by Mr. Edgeworth, who kindly permits the above description to be taken from his manuscripts.

S. *Hirculus*, but quite different in the foliage. We entirely agree with De Candolle in uniting under one specific name the S. *lanceolata*, *Moorcroftiana* and *parnassifolia* of Wallich's herbarium.

TAB. XXI.—Fig. 1. Front, and *f.* 2. back view of a flower; *f.* 3. corolla; *magnified.*

3. **CICENDIA** *Roxburghii*, Griseb.; caule erecto tetragono vage trichotome ramoso, foliis late ovatis oblongisve subacutis, pedunculis ad apices ramulorum trifloris aliis axillaribus 1-3 floris, calycis laciniis acuminatis corollam superantibus. (TAB. XXII.)—C. *Roxburghii*, Griseb. Monogr. Gent. p. 160. *Hopea dichotoma*, Vahl, Enum. v. 1. p. 8. *Pladera pusilla*, Roxb. v. 1. p. 419. *Canscora*, Rœm. et Schultes, Mant. p. 230.

HAB. Mooredabad, Upper India; *Dr. T. Thomson.*

Pusilla, 4 unc. alta. *Caulis* erectus subfastigiatim ramosus, ad angulos tenuissime alatus. *Folia* patula sub ⅓ unc. longa. *Inflorescentia* dichotoma, floribus ternis et in axilla ramorum solitariis, interdum axillaribus. *Calyx* campanulatus, laciniis tubum æquantibus gradatim attenuatis. *Corolla* tubo subinflato, limbo quinquelobo, lobis revolutis oblongis acutis. *Stamina* 5, quorum 4 sterilia. *Ovarium* elliptico-oblongum. *Stylus* elongatus, stigmatibus 2 divaricatis.

This species has a very wide range, namely, from the base of the Himalayah Mountains southward to Madras, in the Peninsula of India. It is selected, as a hitherto unfigured plant, along with the two accompanying ones, from a rich and beautifully preserved Herbarium, formed in Upper India by DR. THOS. Thomson, some of whose valuable observations on the Botany of those regions we hope soon to bring before the public.

TAB. XXII.—Fig. 1. Flower; *f.* 2. corolla; *f.* 3. corolla, laid open; *f.* 4. transverse section of ovary;—*magnified.*

On FITCHIA, *a New Genus of arborescent* COMPOSITÆ, (Trib. Cichoraceæ), *from* ELIZABETH ISLAND, (*lat.* 26°, *long.* 125° *W.*) *in the South Pacific, by* J. D. HOOKER, M.D. R.N. F.L.S.

(TABS. XXIII, XXIV.)

CHAR. GEN.—*Capitulum* multiflorum, monoicum. *Involucrum* imbricatum, squamis coriaceo-carnosis sub 3-seriatis. *Receptaculum* planiusculum, paleaceum, foveolatum, marginibus nudis. *Flores masculi* ligulati, perplurimi, ligulis recurvis pubescentibus, filamentis elongatis tortis superne articulatis, antheris ecaudatis stylo apice obscure bidentato. *Achænium* valde compressum, appresse sericeo-pilosum; *pappus* bisetosus setis elongatis hispidulis. *Flores fœminei* ignoti.—Arbor, v. frutex, *glaberrima.* Rami *nudi, cicatricati, apices versus foliosi.* Folia *opposita, longe petiolata, late ovato-cordata, obtusa, integerrima.* Capitulum *magnum, terminale, solitarium, nutans, pedunculo elongato.*

1. FITCHIA *nutans,* Hook. fil. (TAB. XXIII, XXIV.)

HAB. Elizabeth Island, in the South Pacific Ocean, (*Cuming,* n. 1424.)

Rami validi, crassitie digitæ minoris, lignosi, cortice pallide flavo tecti. *Folia* ad apices ramorum opposita; *petioli* graciles, patentes, 2-pollicares, basi in stipulas latas connatas

datis. *Pollen* globosum, echinulatum. *Stylus* elongatus, filiformis, superne tetragonus, scaberulus, apice contracto brevissime bicruri, ramis divergentibus. *Achænium* vacuum, lineari-oblongum, basi apiceque truncatum, dense sericeo-pilosum antice obscure carinatum. *Pappus* bisetosus, setis 2 validis hispido-pilosis corolla brevioribus.

A very noble plant, belonging to a new genus which will rank next to *Rea* of Bertero and Decaisne. I have named it in honour of one who is well known as a most accurate and elegant Botanical artist, Mr. Walter Fitch, to whose pencil are due the plates of this work, of the Icones Plantarum, of the last twelve volumes of the Botanical Magazine, and of the greater part of the Flora Antarctica.

Arborescent *Compositæ*, belonging to genera wholly differing from those found on continents, often occur in insular positions, and at once give a character to the landscape and to the Botany of the island they inhabit. This remark applies invariably to islands whose other vegetation differs from that of the neighbouring lands; and also, in a certain degree, to isolated spots, where the Botany is not of such a confined nature. Thus, in St. Helena, of which the entire Flora is specifically different from that of either Africa or America, the *Compositæ* are invariably frutescent or arborescent, belonging to 4 genera, all confined to the island, and together containing 10 species. New Zealand probably ranks, so far as we at present know, next to St. Helena in peculiarity, though from its size it partakes of a continental vegetation in the number of its genera, those of *Compositæ* amount probably to 30, including 60 species; the arborescent are 8, with nearly 14 species, the latter all restricted to New Zealand, as are 5 of the former. The island of Juan Fernandez exhibits but few peculiar genera, though the species are almost wholly unlike those of the neighbouring coast of Chili. As far as I have ascertained, the *Compositæ* there amount to 17, distributed amongst 8 genera; 3 of them, containing 12 species, are arborescent, and grow nowhere else.

The Galapago Islands have a very remarkable Flora, more than half the native flowering plants being different from those of the American continent. Twenty-one are *Compositæ*, (divided into 13 genera), all but one peculiar; 3 of these genera are arborescent or frutescent, and include 8 species.

Elizabeth Island is situated in the Pacific Ocean, and although we know little of its Botanical productions, there is every probability that they are, in a great measure, identical with those of Pitcairn's, and other islands of the Low Archipelago, and the Society groups; all which are considered to rank under one Botanical region, including all the South Sea Floras. What I would particularly notice here is, that in none of these are any arborescent *Cichoraceæ* seen, or if *Cichoraceæ* at all, certainly none allied to *Fitchia*. This occurrence of a plant which appears characteristic of an American island, at the western extremity of a very widely extended Botanical region, (wholly unlike the American), is a very singular fact, and we cannot help combining it with the circumstance, that, except Ducie's and Easter Islands, Elizabeth Island lies nearer Juan Fernandez, (where arborescent *Cichoraceæ* chiefly abound), than any of the Pacific group. Thus there is a sort of union of two widely different and far separated Floras, at the approximating point of their geographical positions, and not caused by specific identity, which had already existed on the principal islands. Thus, taking the Sandwich group and Society group as an instance, both are situated in nearly the same longitude, equally distant from the Equator, one in the 20th north, and the other in the 27th degree of south latitude. They contain 50 flowering plants in common, a considerable proportion of which are littoral species, equally natives of the other Pacific Islands (almost none, however, inhabiting the American shores:) in other respects their Floras are wholly dissimilar. Few or no marked genera are common to both with representative species in each. The Society Island vegetation is the poorest, the most tropical in forms, and the least peculiar, differing from that of the Sandwich group in possessing more *Malvaceæ*, *Leguminosæ*, *Myrtaceæ*, *Melastomaceæ*, *Cucurbitaceæ*, *Apocyneæ*, *Urticeæ*, and particularly *Orchidaceæ*; and wanting, or nearly so, the *Compositæ*, *Lobeliaceæ*, *Goodenoviæ*, and *Cyrtandreæ* of the Sandwich Islands, which are very numerous, peculiar and characteristic there: whilst of such Orders as *Gramineæ*, *Cyperaceæ*, *Euphorbiaceæ*, *Solaneæ*, *Convolvulaceæ* and *Rubiaceæ*, well represented in both, there exist but few species, and no peculiar genera, common to the two groups.

TAB. XXIII and XXIV. Fig. 1. Palea; *f.* 2. floret; *f.* 3. stamen; *f.* 4. apex of style; *f.* 5. fruit; *all magnified.*

BOTANICAL INFORMATION.

ZEYHER AND BURKE;

South African Collections of Plants.

Mr. Charles L. Zeyher is favourably known to science from the many years (not less then twenty-one) that he has devoted to studying and collecting plants in distant regions. His first collections were made, we believe, in the Mauritius, in company with the unfortunate Sieber: but the larger portion of his time has been spent, as Botanists are well aware, in South Africa, and much of it in company with Ecklon. Since Ecklon left the Cape of Good Hope, Mr. Zeyher has made many journeys and passed a long while at Uitenhage, with the vegetation of which district our Herbaria are greatly enriched through his means. But the most remarkable of his journeys was performed in company with Mr. Burke, who, as already mentioned in the 2nd volume of this Journal, p. 163, was charged by the Earl of Derby to undertake a Natural History mission into the interior, towards the tropics, in a direction north of Uitenhage, when they reached a district called Macalisberg, in the 24th degree of S. latitude.

Mr. Burke's rough Journal having been placed in our hands through the kindness of Lord Derby, we are sure we shall gratify our readers by some brief extracts from it, which will at least serve to show some of the difficulties to which travellers are exposed in that less than half civilized country.

In December, 1839, Mr. Burke sailed for the Cape, where he arrived in the middle of March, and after paying his respects to Baron Ludwig, the eminent cultivator of rare plants and a distinguished patron of every branch of Natural History, he proceeded to Vyge-Kraal, the residence of the

Vyge-Kraal with one waggon, a Hottentot driver and leader, and fourteen very poor oxen, which we are assured, will improve in the good country we may expect soon to reach. Hardly, however, had we left Mr. Fry's door, than one of the wheelers fell down and the waggon passed over him, though without doing him much harm, and another ox appearing too weak to go far, we left these two animals behind and pursued our way with only twelve. The stubborness of some of our cattle, and the debility of others, compelled us to make an early halt for the night, and leaving Punyer to take care of the waggon, I returned to Vyge-Kraal. The following morning we started with the full complement of oxen, intending to reach Pompion's Kraal, and were within four miles of it, when the animals gave in, and we let them all loose, hoping to find them fresh next day, but were disappointed, for we had to lead two for some way, and finally to leave them behind us, while we sent the waggon on to Pompion's Kraal. At this place I received disheartening intelligence from a man who had been sent far up the country to purchase beasts. The small-pox had broken out among his people, and he was obliged to leave them ill in the field, where he fears that many must have died, the farmers being so terrified by the disease that they refused to afford help, or to allow any traveller even to approach their dwellings.

We stopped two days at Pompion's Kraal to recruit our oxen, and at last found it necessary to start with twelve, leaving the other two with their heads on the ground, apparently dying. The weather was very bad, heavy rain and much lightning, and to add to our troubles, some dogs found out our stock of meat, and stole it at night from the back of the waggon, where we kept it rolled in a sheep's skin. The rain too put out our fire, so that we were unable to cook any supper. On the 26th of May we halted by a small stream near Berg River, where I gathered several pretty species of *Oxalis*, not known in England. I think that the difficulty which cultivators find in making Cape bulbs succeed with us, is due to the circumstance of the plants being taken up while in bloom. Thus, the tubers of these *Oxalides* are not matured, and I fear they will perish. Such plants should be removed in a dormant state. Punyer had the good fortune to catch two hares, a welcome addition to our food, after the loss of all our meat.

We were detained two days by the swollen state of the Berg River and spent the time in trying to purchase provisions for the journey, which we found it difficult to do, from the prevailing dread of small-pox. One lean sheep and a few loaves of bread were all we could procure. The oxen gave us much trouble by straying and wandering into the neighbouring farms, where they were detained by the owners for payment of pretended damages. An English settler and his family were also waiting to cross the river; he had been on his way to Cape Town to purchase goods, but the report of small pox arrested him, and he now only desired to get safe back to Sneuberg, and we were happily enabled to give mutual aid, and all of us got over the Berg River on the 29th, and to the Outspan place at Koopman's River on the 30th. The afternoon of the 31st was spent at that interesting ravine, called the Neu Kloof. It is about a mile long, with lofty mountains on either side, and the Little Berg River the cattle nearly exhausted, and ourselves unable to purchase provisions, owing to the prevalent dread of contagious disease. The hyænas prowled about us constantly, and would probably have made prize of our oxen at night, if they had not been too lean to be worth catching. It was most disheartening to contemplate the long journey before us with such cattle, and if I could have afforded it, I should have purchased a new team; for the farmers, who are well aware of the nature of the country, were continually assuring us we should never get them half way to Uitenhage. The weather too was cold and rainy.

On the 4th of June, we arrived at a village called Worcester, where we met with still worse treatment, for not content with denying us any provisions for our money, the inhabitants threatened us with imprisonment for coming thither without a certificate of health from Cape Town. However, they were too anxious to be rid of us to fulfil this menace, and finally sold us a little bread and salt beef to hasten our departure. I was persuaded to let the people of the waggon have some brandy to keep up their spirits, and having given Punyer a bottle for this purpose, he served them rather too freely, so that from singing they fell to fighting, but ended at last by going quietly to sleep. The next day we proceeded to the Hex River, where two of our cattle were knocked up by drawing the waggon across it, and the hardships of the road, which led us over the same river no fewer than nine times in three days, reduced our team to ten beasts, all in pitiful plight, and quite unfit to ascend the Hex River hill, which was our next trial. Accordingly, at one steep place, the oxen all stopped, and away went the waggon backwards, dragging them along the stones and bruising them severely. The cold frosty nights and barren ground which affords hardly any food, give the poor creatures no chance of recovery. The soil is generally a mixture of gravel and clay, sprinkled with stunted *Mesembryanthemums*, and, here and there, a *Euphorbia;* I also saw *Loranthus elegans* in flower.

The same state of things prevailed for a fortnight. Though much rain fell, the ground looked everywhere parched. At one place, we came to a swarm of locusts and spent a whole hour in passing through them. It is difficult to imagine what these insects could find to eat; our oxen can hardly pick up anything, and they wander so much, that on one occasion I had to pay seven dollars to a Dutchman for damage done to what he called his garden, where there had been some young corn, on which they browsed. The rivers are nearly dry and water is often scarce. Near a place, called Hartebeest's Fonteyn, I noticed a few ostriches and Spring-boks.

On the 23rd, we fortunately fell in with a Cape Town butcher driving sheep, and bought one of them. It was remarkable to see how our dogs ate the locusts, through clouds of which we passed that day. At the Dwaka River, which we reached on the 25th, it seemed expedient to halt, that the oxen might be refreshed. A boor, whom we found there with his flock, offered to exchange my team for good oxen, for 200 rix-dollars; but I cannot afford this sum and have therefore no alternative but to push on as far as I can, and then, leaving the cattle and waggon in Punyer's charge, to proceed alone to Uitenhage and send back assistance. It seems certain that the cattle cannot go much farther; but I shall try night-travelling, for the hot days exhaust us all, the tation could be descried but a scanty growth of *Mesembryanthema.* On application at a house, situated rather remote from the rest, the owner let me have some bread and other provisions; but said that I must not enter, or the neighbours would apprehend infection. The distance that yet lies between this place and Uitenhage is considered more trying than all our previous journey, because water is particularly scarce.

Till the 5th of July we continued our journey at a very slow pace, ourselves and the cattle suffering severely with hunger and thirst. On one occasion I was much disappointed in not capturing a large ant-eater, which, when pursued, took to a hole not big enough to admit him, but though another man and I, with a spade, endeavoured to dig him out of the ground, he burrowed so actively, making the hard soil and stones fly before him, that we, weak and fatigued, were obliged to give up the chase. Often we travelled all day without drink, and thought ourselves fortunate to find a pool of dirty and brackish water at night. The oxen, which scented water on such occasions from a great distance, became sometimes so unruly that we could not keep them in the path, though their poor feet were so sore, that they had difficulty in standing still; and often seemed unable to move. At last, I decided on leaving the waggon in Punyer's charge and going forward to Uitenhage for a fresh supply of cattle. The leader volunteered to accompany me, and the driver to stay with Punyer, and on the 6th we accordingly parted company; but many were the difficulties my companion and I met with ere reaching Uitenhage. The very first night, when tempted, by the coolness of the air, we endeavoured to thread a pass in the Zwart-Berg, we lost our way in the bush, and wandered about, narrowly missing a fall down a bank upwards of twenty feet high. I also stumbled into an ant-eater's hole and though no bones were broken, I found myself much shaken. The nights were so frosty and chilly, that it was hopeless to attempt sleeping; one of my eyes became swollen and very painful with cold and weariness, and we generally found it best to lie down to rest during the heat of the day and pursue our journey late at night and very early in the morning. On the forenoon of the 8th, we came to Olifant's River, and there meeting a boor who was seeking his master's cattle, he put us in the right track for Uitenhage, and told us of a farm-house where we might procure food; but when we got there, the owner with his family and cattle had gone away to seek grass and water, and a Fingoe, who alone was left, was unwilling to sell us any provision. However, after some persuasion, he let us have a piece of mutton for three shillings, and we roasted it in the bush and made a hearty meal. Thirst was our greatest tormentor; we vainly scratched in the sand of a periodical river-bed, but could not obtain a drop, and were unable to sleep from the distressing want of drink. The next day, towards evening, we came to a small pool of muddy, though most acceptable water, under a rock, and stretching ourselves on a comfortable bed of *Mesembryanthemums*, got some rest. It was, however, no sooner dark, than the howling of hyænas and jackals aroused us, and the stars being bright, we quitted the fire at midnight to proceed on our way; but were quickly entangled in the thick bush, and lost several hours in wandering about to recover the track. The thorns scratched us, and we got several bruises by falling much with thirst, our course lying near the top of a line of hills; when, just as my companion had refused to exert himself any more, we suddenly saw beneath us the bed of a large periodical river, that branch of the Camtoos called the Groote River. Our disappointment was extreme, when we found it was perfectly dry; but, by dint of searching, I detected a little water in a hole, and having drunk all we could of the salt and disagreeable fluid, we lay down to rest. Sleep was however out of the question, for the hyænas howled so dreadfully that we were glad when daylight appeared to enable us to pursue our journey. Meeting three waggons at a time, I requested some food, but was refused, the people could spare none. All day we kept passing numerous specimens of *Aloe Africana,* and at one place we went through a grove of *Opuntia vulgaris,* from 10 to 15 feet high. At sunset we reached the top of a high hill, where we halted; no firewood could be found and we lay down supperless, with no prospect of breakfast next day. The cold prevented our sleeping, and when soon after daybreak we met a waggon and asked for something to eat, we were again refused; but the people directed us to cross a hill, where we should find a farm-house. We did so, and reached the place about noon; the owner is an English gentleman, named Dr. Jones, and he entertained us most hospitably, and my companion seeing a Hottentot occupied in skinning an ox which had been gored, obtained part of the meat as a provision for our journey. *Zamia horrida* was very fine in this neighbourhood.

On the following day, the 14th, we arrived at Uitenhage about noon. I observed *Plumbago Capensis* and *Loranthus elegans* growing near the track. Mr. Zeyher was here awaiting me; but to my great disappointment I found that no preparations had been made for the journey into the interior, Mr. Jones having neither sent the goods which were to have come by sea, nor despatched to Cape Town the animals which are still here and at Algoa Bay. Mr. Zeyher proposed going to Port Elizabeth and I agreed to accompany him, in hopes of receiving some tidings. This plan having been fulfilled, I returned to Uitenhage, still without news of Mr. Jones, and engaged a span of oxen to go and fetch our waggon. The Hottentot who had come with me went back with the team, that no time might be lost in seeking for the waggon; but so reluctant are the owners of cattle to send them into the Karroo in this dry season, that three or four days more elapsed before the oxen set off.

As I could not leave Uitenhage without providing that the animals procured for the Earl of Derby should be sent securely to the Cape, and as Mr. Jones did not arrive, I decided on taking the animals myself and bringing back our stores and goods for barter. I therefore proceeded to Port Elizabeth, and engaged a passage on board the brigantine "Conch." The animals were shipped on the 30th of July and 1st of August, and the following is a list of them.

Four ostriches, four spring-boks, one young bush-bok, a common gnoo, three spring-hares, and two jackals, two Stanley cranes, three Guinea fowls, and five pheasants.

We unmoored on the 2nd of August and stood to sea in company with H.M. brig "Curlew." The weather was fine, but a strong breeze soon sprung up, which increasing to heavy gales, the main-stay sail was carried away and we

Kraal till they can be safely transmitted to England; he will forward my goods in the waggon which is to fetch the animals, and I shall convey the baggage with me to Algoa Bay.

August 20th.—I despatched the animals to Vyge-Kraal, and though the articles Mr. Fry was to have sent are not come, I am obliged to sail at once for Algoa Bay, my passage being secured in the schooner "Louisa," trusting that Mr. Fry will forward them by the next ship. Nothing particular occurred on the passage to Algoa Bay, and I. reached Uitenhage again on the 29th, where I found Punyer with the waggon. The "Conch" had been reported as lost.

From this time to the beginning of November, I remained at Uitenhage, in daily hope of receiving the paper, &c., which Mr. Fry was to have sent. Several vessels arrived, among them the "Conch" went and came twice, and still our goods did not appear. For want of drying-paper, I could collect few plants; at last, on the 4th, I heard from Mr. Fry that he had shipped off my things, but he did not say by what vessel, nor send a bill of lading. Punyer is at Port Elizabeth, engaged in attending to birds and animals which are to go on board the "Vectis" to Cape Town.

(*To be continued.*)

Notes on the VEGETATION *and general character of the* MISSOURI *and* OREGON TERRITORIES, *made during a Botanical Journey in the State of Missouri, and across the south-pass of the* ROCKY MOUNTAINS, *to the Pacific, during the years* 1843 *and* 1844; *by* CHARLES A. GEYER.

(*Continued from* p. 492.)

III.—Or Saline Desert region, commencing about Laramie's Fork of Platte River.

This region has not such easily defined limits as the foregoing two, but is scattered widely over the remaining western part of the North American continent. Commencing from its great centre, about the uppermost sources of the rivers

Platte, Arkansas and the Colorado on the West, it comprises most part of the higher plains of the southern slope of the Rocky Mountains, from an approximate elevation of 4,000, down to 1,200 feet; and follows the new red sandstone formation to every point of the compass; northward to the Saskatchawan and Lake Winnipeg; south to the Wachita of upper Arkansas river; east to the mouth of Big Sioux river of the Upper Missouri, and even to the Des-Moines river of the Upper Mississippi; and, lastly, westward to the Walla-Walla, a small tributary of the great Columbia and Oregon territory.

With so great a variety of elevation and extent of territory, (through nearly 20° of latitude and longitude) it will be necessary to subdivide the whole into 4 subregions, according to their principal features. The one prevailing feature is that of a comparative barrenness and desert-like appearance, some small parts of river-valleys only excepted.

General character of the vegetation.—East and westward the limits of the *Cupuliferæ* and *Coniferæ.*—Small groves and thickets of *Salicineæ!*—*Eleagneæ,* conspicuous in the two genera *Eleagnus* and *Shephardia!*—Station for the greater proportion of N. American *Chenopodiaceæ* in North America! —*Hordeaceæ,* prominent among the *Gramineæ.*—*Cichora-*

Prevailing colours, white and yellow. The foliage passing through every shade, from deep dull green to silvery white.

1st Sub-region.—Extensive depressed tracts of the great plains, on the sources of Platte River and the Colorado on the West, being subterraneous continuations of the southerly spurs of the Black Hills.—They consist of great ranges and detached piles of horizontal new red sandstone based on deeply inclined masses of the coarsest conglomerate, rarely directly on bituminous shale, under the great detached piles, or near river-defiles. The depression is about 200 feet below the general level of the plains above.

In traversing the great sandy deserts, the traveller's attention is excited by numbers of obtuse conical piles, towering above the level of the plains, and forming a sort of belt north and south in the south-pass along the horizon.—Northward, leaning on the pine- and snow-clad central chain of the R. Mountains; southward, losing themselves in the endless plains of Upper California. Suddenly the traveller finds his course arrested by a precipice, he surveys it with wonder, and imagines the exhumed ruins of Herculaneum or Pompeii are before him. Spacious streets and avenues of level rock, formed by regular ranges of new red sandstones haped into grotesque ruins, or high massive piles of conglomerate, containing globular, oblong, or columnar boulders imbedded in a grayish soft claystone cement. These boulders are of great size, smoothed by trituration, sometimes partially freed from cement, fronting the main pile and resembling columns, statues or monuments of every shape. On the top rests the obtuse, conical cupola remnant of sandstone, surrounded by a variety of small turrets, bearing likewise on their summits curiously shaped cupolas of greenish or brownish sandstone. In another direction is a series of low, oblong, angular platforms of sandstone, resembling tombs, or extensive terraces of astonishing regularity, with basins full of brackish water; piles of globular boulders, or obelisks, balancing a curious block of sandstone, may be met with here and there in the spacious plains. The outlets are mostly narrow, dark defiles, and, on passing them, another such monumental city of Nature's own work is before the traveller; and not until he is so fortunate as to strike upon a river can he again resume his direct route.

An almost total absence of animal and vegetable life, and a death-like stillness pervade these regions, which together with the want of good water, of grass for the horses, and the parching sun of August, rendered this the most intolerable place I ever visited in my botanical rambles. Yet I was not disappointed, for some of the rarest specimens of plants in my collection were gathered from one solitary cliff within this region, about the junction of Ham's and Black's rivers, of the uppermost waters of the Colorado on the west.

A low crest-like ridge of sandstone rises on an isolated massive bed of bituminous shale, sloping towards the river from the adjacent desert; plains teeming with luxuriant plants of *Stanleya viridiflora*, Nuttall, &c. Around it grew bushes of the singular *Helianthus*, No. 96; and below, on the carbonaceous shale, I found the splendid *Hydrophyllum*, No. 93, with the *Bartonia*, No. 95. On the lower part of the slope I gathered, partly on a loamy calcareous crust, various *Chenopodiaceæ*, and a few *Onagrarieæ*, comprising the numbers 92, 94, 100, 101, 103 and 104.

solitary smoky-coloured *Emberiza*. The latter seemed delighted with our unexpected visit, and followed us for about ten miles, until sunset; alighting on our hats, or travelling with us, by taking a seat on the crupper, or settling alternately on some *Artemisia* bush. Both these creatures probably had lost their way as we three had lost ours. Our bad luck, as we called it then, turned out good for us, for by that involuntary circuit (of about 90 or 100 miles) we evaded a party of marauding Shyenne Indians.

2nd Sub-region.—Masses of bituminous, or simply carbonaceous shale, bearing castle-like cliffs of horizontal sandstone, elevated above the plains; or lower, and capped with a heavy layer of brownish ferrugineous loam, commencing at the mouths of Big Sioux and Qui-court, and continuing for about 900 miles on both sides up the Missouri to Yellowstone river, with a slight easterly inclination. Carbonized organic remains of Ammonites and Orthoceratites are strewed over the surface.* This and the following sub-region comprise the "Burnt Hills" of Lewis and Clark.

The declivities fronting the river are clothed with a spare but elegant vegetation, and repay the visitor for the desolate aspect of the numberless sandbar-islands in the river. Bordered by the groups of *Juniperus Andina* (J. *tetragona ?*) which inhabit the deep protected ravines, a slight shrubbery of *Shephardia argentea*, *Ribes aureum*, and of *Rhus trifoliolata*, clothe the base of the hills, further up mingles the prettiest of the genus *Amorpha* (A. *nana*, Nutt.) with dispersed herbaceous plants. *Yucca angustifolia*, and some species of *Guttierezia* and frutescent *Chenopodiaceæ* fringe the cliffs above.

The most brilliant flowers are those of the *Stanleya pinnatifida*, Nuttall; it grows in thick clusters, about three feet high, on narrow parapets, forming, for the most part, brilliant golden-yellow serpentine lines on the hill-sides, visible at the distance of half-a-mile, the racemes being sometimes a foot and a half long. It is most abundant about the mouth of White River, and very rare further up, where the genus *Homolobus* takes its place. Lewis and Clark, in their narrative, mention this plant as a sort of an esculent *Cabbage*; and Pierre Durieu, their guide, related to me, that he himself partook of the meal they had prepared from the glaucous cabbage-like leaves, after which they all sickened, and violent vomiting with convulsions ensued. *Astragalus racemosus*, Pursh, a bushy erect species, two feet high, alternates with the *Stanleya*, and bears large racemes of showy milk-white flowers. Other herbaceous plants, scattered over the lower slopes, are the superb *Bartonia ornata*, *Cnicus undulatus*, *Pentstemon grandiflorum*, *caeruleum*, *cristatum*, *Erigeron hirsutum* and *Cynoglossum Nuttallii*; finally, the *Yucca*, with its rich symmetrical silvery foliage and floribund scapes, completes the vegetation on the crest of the precipice.

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* See J. N. Nicollet's Report, for further geological information.

The loamy slopes above are either naked or clothed with annuals, which latter are chiefly *Helianthus tubaeformis*, *Chenopodium subspicatum*, *Kochia dioica*, *Euphorbia polygonifolia*, *Hosackia Purshiana* and *Atriplex argentea*. Towards the grassy borders of the adjacent plains are seen groups of *Seseli triternatum*, *Allium striatum*, *Psoralea cuspidata*, with a few scattered plants of *Viola Nuttallii*, *Schrankea uncinata*, "Graine de bœuf." Not until lately has the fruit of this tree been appreciated, which, together with its elegant form and foliage, affords an additional recommendation to the cultivator. It is a shrubby tree, at the most fifteen feet high, with silvery-green foliage and spinescent branchlets, which bear bouquets of bright red berries, becoming diaphanous and acquiring a delicious acid when touched by the frost. In the gardens of Sir Wm. D. Stewart at Murthly Castle, Scotland, I have since seen a number of thriving shrubs, which that gentleman had raised from seeds gathered by himself on the Upper Missouri. In this species the female individuals are rarer than in the Canadian Buckthorn, and perhaps more so than in any other N. American diœcious ligneous plant.

The Missouri River is the highway for travellers in this region. Travelling is either tedious by low water, or dangerous during the high water season of the summer months. The scenery, on the whole, bears a stamp of uniformity which would be fatiguing, were it not for the abundance of animals, especially bisons, which traverse these regions, followed by packs of the large brown, the white, and the little barking prairie Wolf. The monarch of animals in these wilds is the grizzly or Missouri Bear, (*Ursus horribilis*), an animal of great size, strength, courage and ferocity. He feeds principally on the flesh of the bison, but also gathers for his vegetable diet the tubers of *Psoralea esculenta*, which he digs up in the gravelly plains, and peels with great nicety. Occasionally herds of elk and antelopes approach the river, and flocks of pelicans sun themselves on the sandbar-islands, or are busy fishing in the turbid water. Among reptiles, the rattle-snake is abundant, especially a long variety with a bright sulphur-yellow ground-colour, and pale brown rhomboid markings. The "horned frog," as it is called, in reality a curious species of lizard, is also found on the tops of the arid hills near the great gravelly plains.

3rd Sub-region.—Labyrinthine depressed regions, situated about the upper waters of Qui-court, Teton and Shyenne Rivers; they seem to be likewise continuations of the easterly spurs of the Black Hills, and consist of vast ranges of bituminous shale, generally below the level of the great plains, but rising towards the river-valleys. They are cut into innumerable, very narrow and intricate, dark defiles or channels, with perpendicular sides about 150 feet in height, which absorb a brackish dark-brown water; otherwise they are analogous to those on the Missouri River, are capped with heavy dark loam, contain the same organic remains and picas of yellowish pumice stone strewed over their surface, and comprise about one half of the "Burnt Hills" of Lewis and Clark. There is nothing worth mentioning in their vegetation, and these tracts are only interesting to the Geologist, in so far as they indicate great part of the saline desert region.

4th Sub-region.—Saline plains; the greatest portion of them in the immediate neighbourhood of the Black Hills; stretching round the base of the Rocky Mountains, and sloping off, interruptedly, towards S.S.E. A loamy crust, with the appearance of having been drifted, or an undulated-crested surface, is the general character of the dry saline plains. Large exsiccated flats, perfectly level, and often shrub bears to Juniper, they gave it the name of "Salt Cedar," by which it is known to Anglo-American travellers. A few more shrubs associate with *Fremontia*, espepecially a *Bigelovia*, (63), the *Chenopodiaceæ*, Nos. 62 and 64, *Iva axillaris*, (here a low shrub), and a spiny, silvery, tomentose *Senecioidea*, which is very rare.* Besides all the *Chenopodiaceæ* of my collection, there grow here those of the Missisippi Valley, and *Kochia dioica*, *Chenopodium rhombifolium*, *Salsola*, &c. Nearer, towards some gravelly ridges, appears an intermediate flora of conspicuous flowering plants, as *Œnothera albicaulis*, *Calochortus*, 68; *Sonchus pulchellus*, *Lygodesma*, 156; *Erigeron*, 140; *Plantago gnaphaloides* and *Erigeron hirsutum*, and some scattered dwarf azure-blue *Pentstemon*.

Dry saline portions of river-valleys harbour an abundance of *Cymopterus glaucus* and *glomeratus*, *Glycyrrhiza lepidota*, *Phaca*, 108; *Plantago eriopoda*, *Castilleia occidentalis*, *Ferula* n. 220; *Pentstemon gracilis*, *Asclepias speciosa* and *Cleome integrifolia*, enclosed as it were in a shrubbery of *Shephardia* and *Eleagnus*; or of *Rosa parvifolia* and *Amorpha frutescens*.

Wet saline river-valleys abound with a herbaceous variety of *Iva axillaris*, the showy *Dodecatheon integrifolium*, *Iris Missuriensis*, *Triglochin maritimum*, the *Cichoracea*, n. 245, but most of all, *Carex*, n. 48.

Stony exsiccated river-valley swamps are waving with an abundance of *Hordeum jubatum*, mixed with *Trichopodium laxum*, *Beckmannia*, *Ceratochloa* and the scattered tall *Calamagrostides*, *cinnoides* and *Mexicana*, rarely are *Alopecurus* and *Poa distans* found amongst them. The rest of the ground is occupied by *Calliopsis bicolor*, *Ranunculus Cymbalaria*, Pursh, *Epilobium coloratum* and *Herpestes rotundifolia*. On the stony loamy and sandy margins grow *Darlingtonia*, *Polanisia*, *Dalea alopecuroides*, *Xanthium*, *Lycopus*, *Ambrosia*, *Sisymbrium canescens*, &c. &c.

Many small exsiccated places in river-valleys harbour plants not seen elsewhere. On the Missouri, I found *Castilleia occidentalis* filling a small hollow, bordered with masses of *Heliotropium Curassavicum.* Again, near Laramie's Fork of the Platte River, some depressions are overrun with *Lippia cuneifolia* and *Œnothera,* n. 178, scattered amongst it. This *Œnothera* and No. 16* are doubtless the two most elegant of the genus in North America; the former is probably new, the corolla white and clear rose-colour, variegated with deep purple spots. It has a ligneous prostrate stem.

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* A specimen in the collection of Sir William Hooker only! the S. *Nuttallii*? T. and G.

In localities, shaded by some high bank of earth, on exsiccated loam, and even soda crusts, grow dense masses of the *Asterea,* n. 115, bearing a great number of stems which were remarkably level-topped; generally it was surrounded by dense carpets of the small pretty *Chrysopsidea,* n. 116.

The prevailing white colour among the flowers arises from *Achillea Millefolium:* as *Calliopsis bicolor,* with *Helianthus tubæformis, Stanleya,* divers *Solidagines* and *Ranunculi* produce the yellow. Blue is rare, and only presented by *Iris, Pentstemon* and *Lithospermum;* red, by *Dodecatheon* and *Cleome,* is likewise rare.

CHAS. A. GEYER.

Dresden, Oct. 14, 1845.

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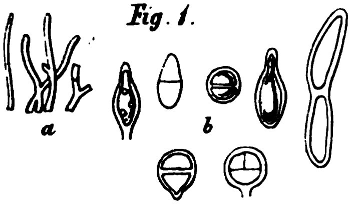
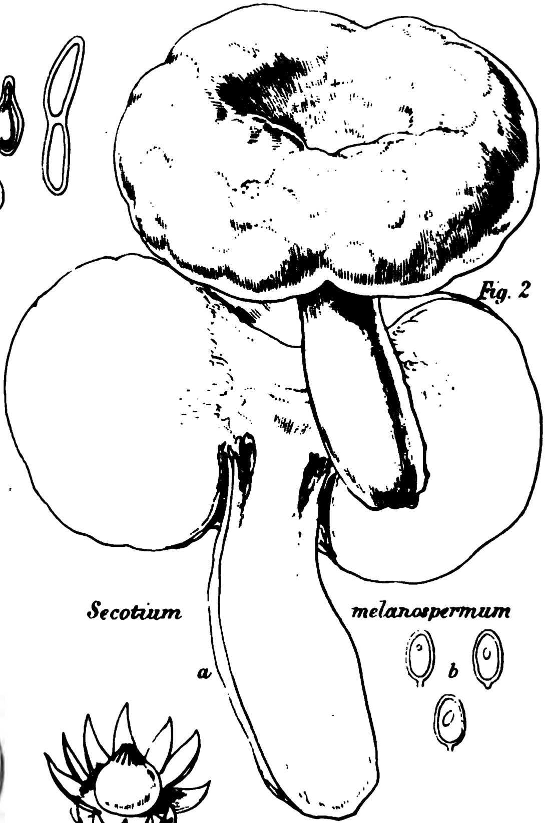


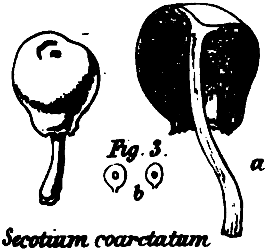
Dacrymyces rubro-fuscus

Fig. 2



Secotium melanospermum

Fig. 3.



Secotium coarctatum

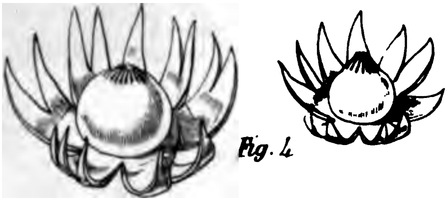
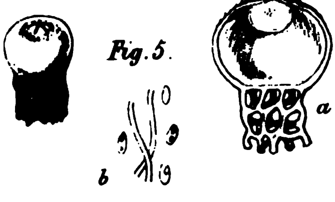


Fig. 4

Geaster Drummondii

Metremyces Lucidus

Fig. 5.



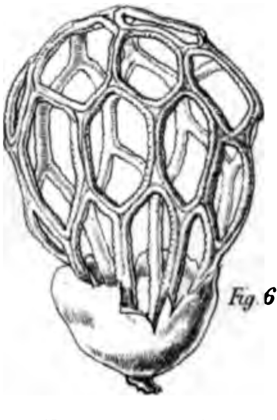


Fig. 6.

Clathrus pusillus

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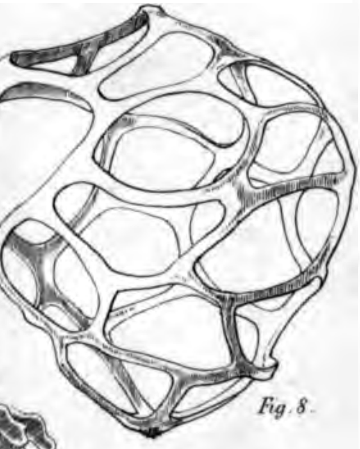
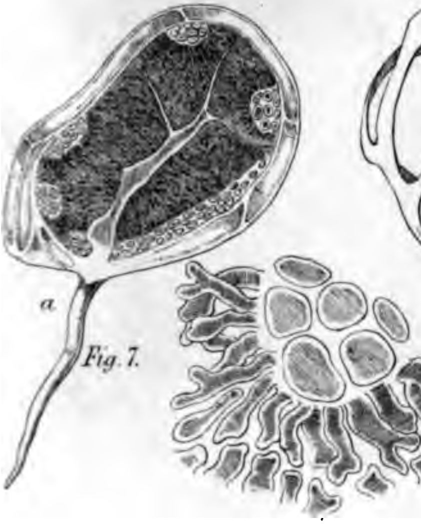
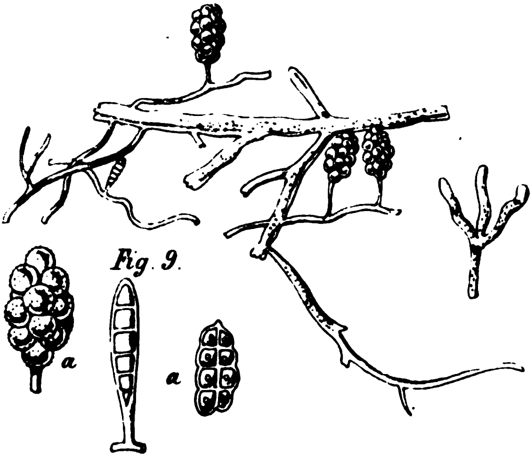
Ileodictyon gracile





Clathrus cancellatus.



Mystrosporium pulchrum

Peziza Drummondii
(ascus)

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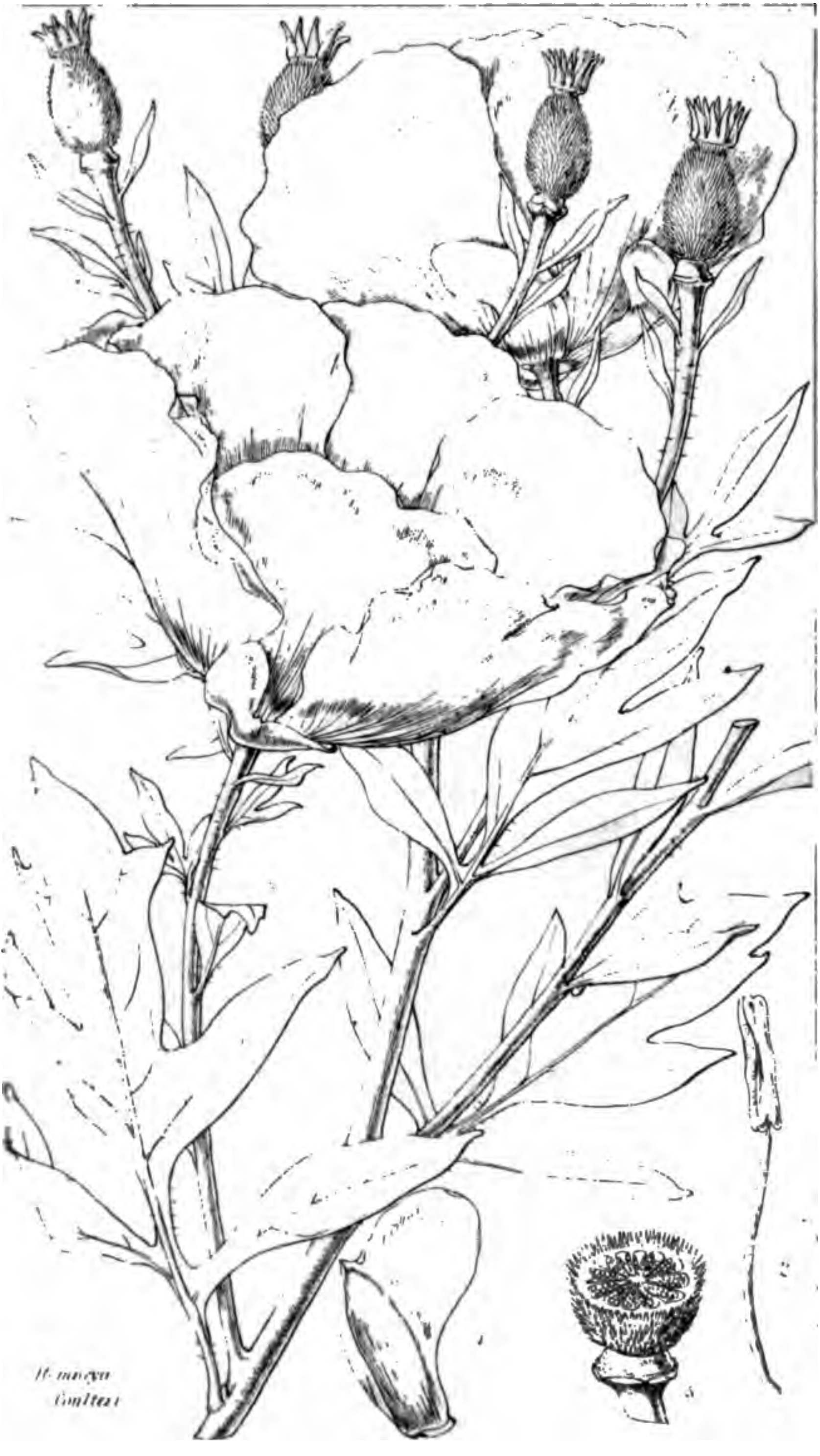
London: H. Baillière, Regent St.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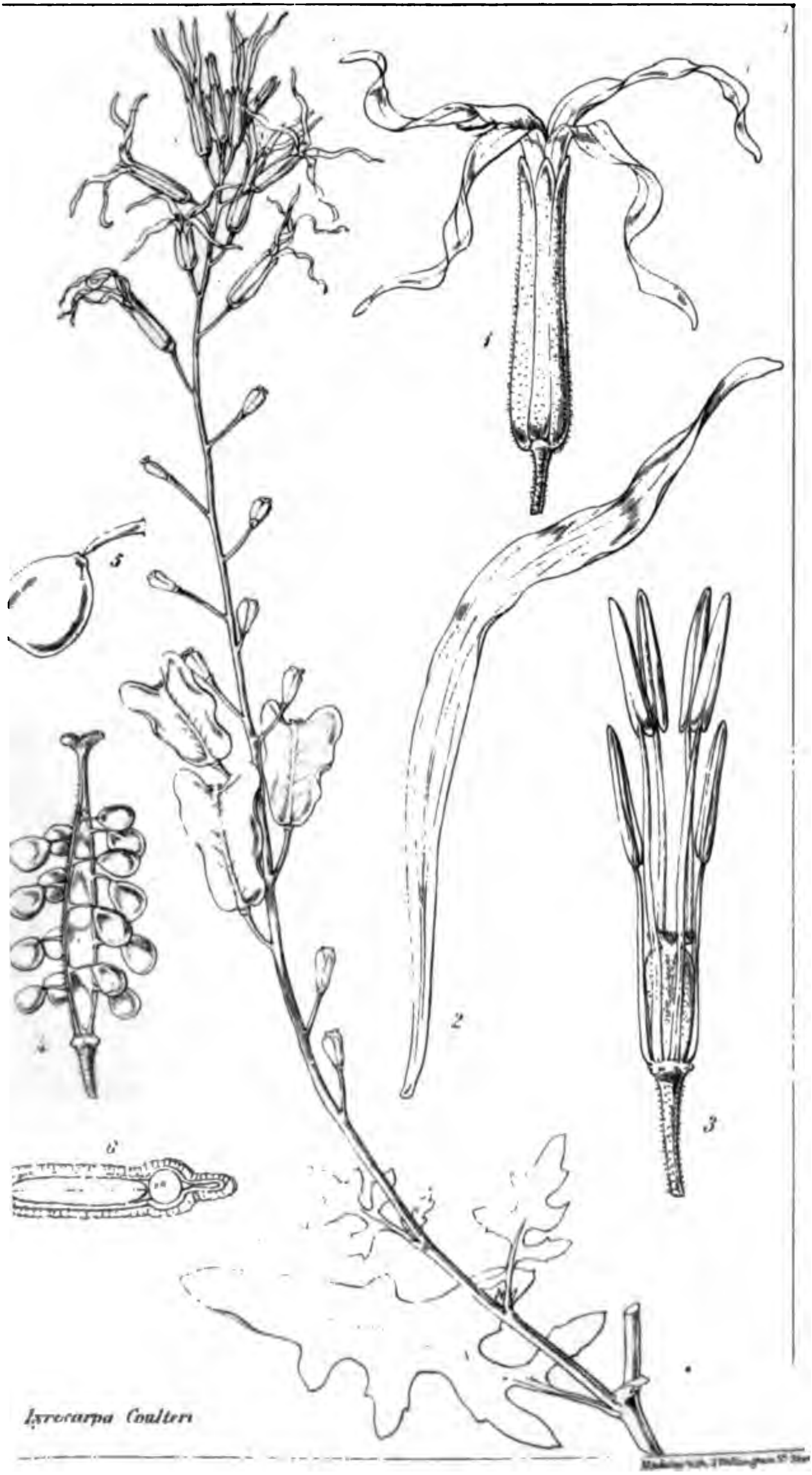

Lyrocarpa Coulteri

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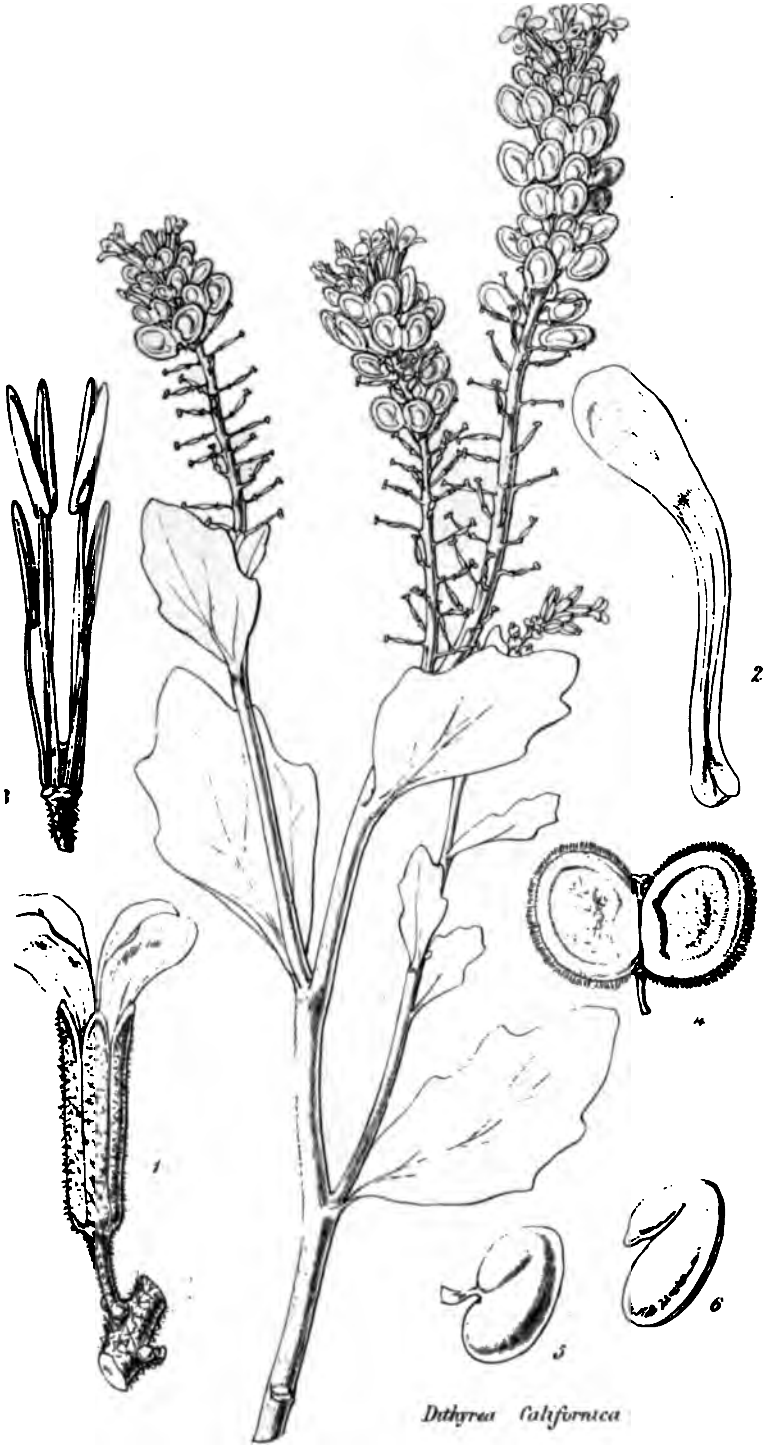

Dithyrea Californica

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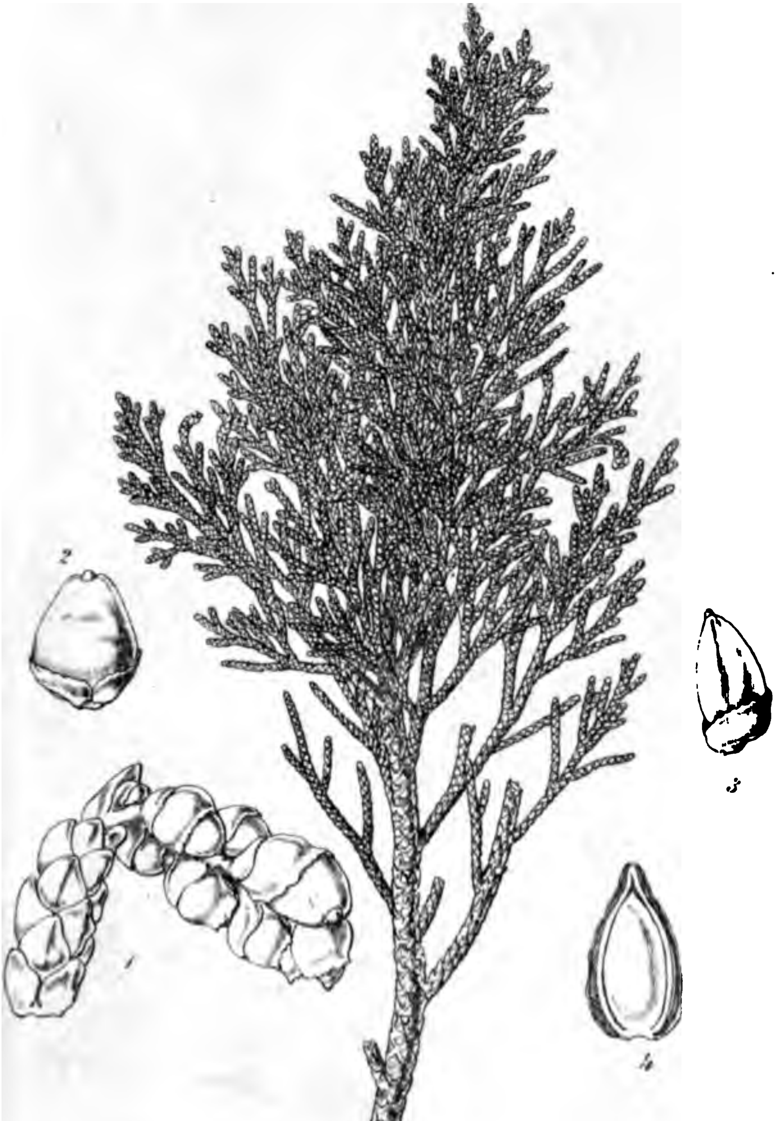
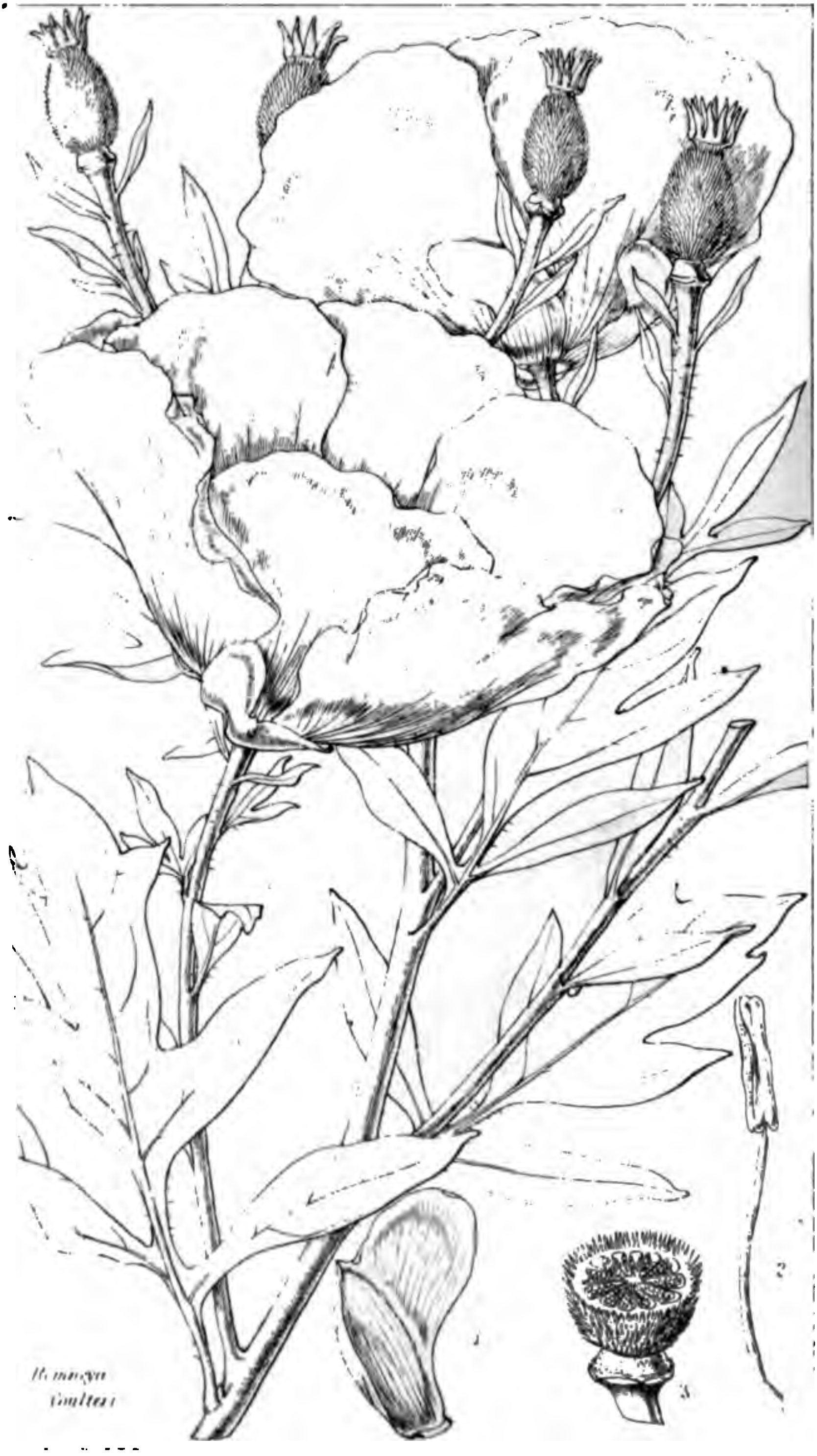


Dacrydium Franklinii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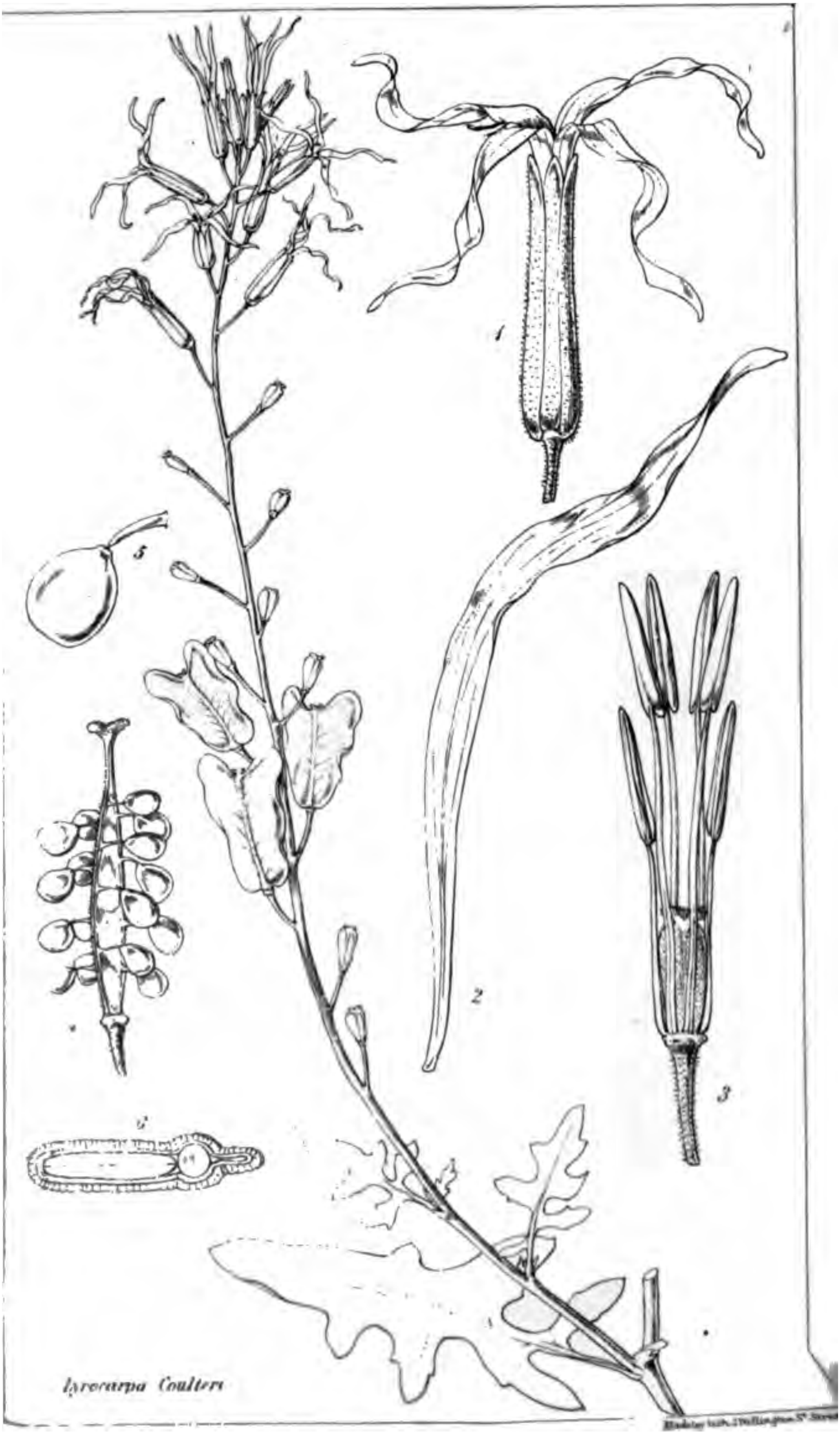

Lyrocarpa Coulteri

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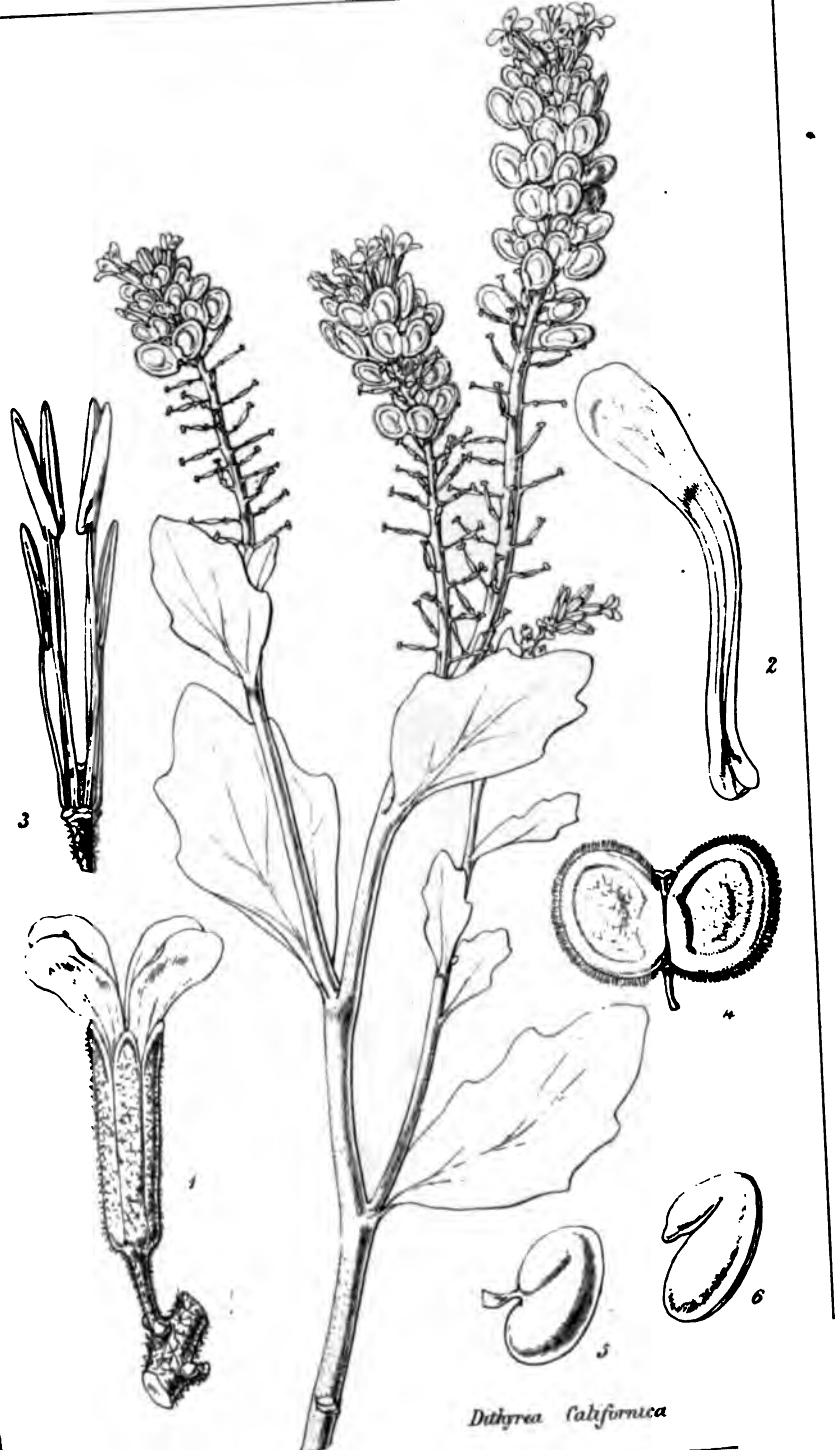
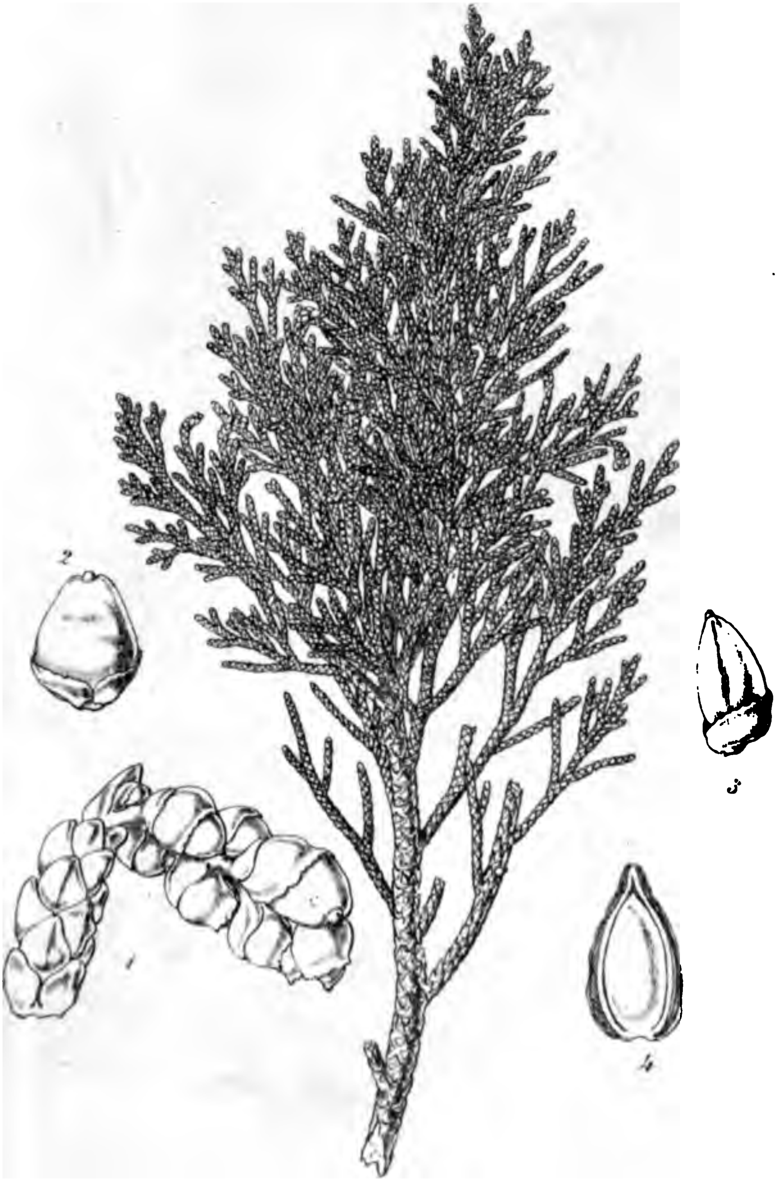
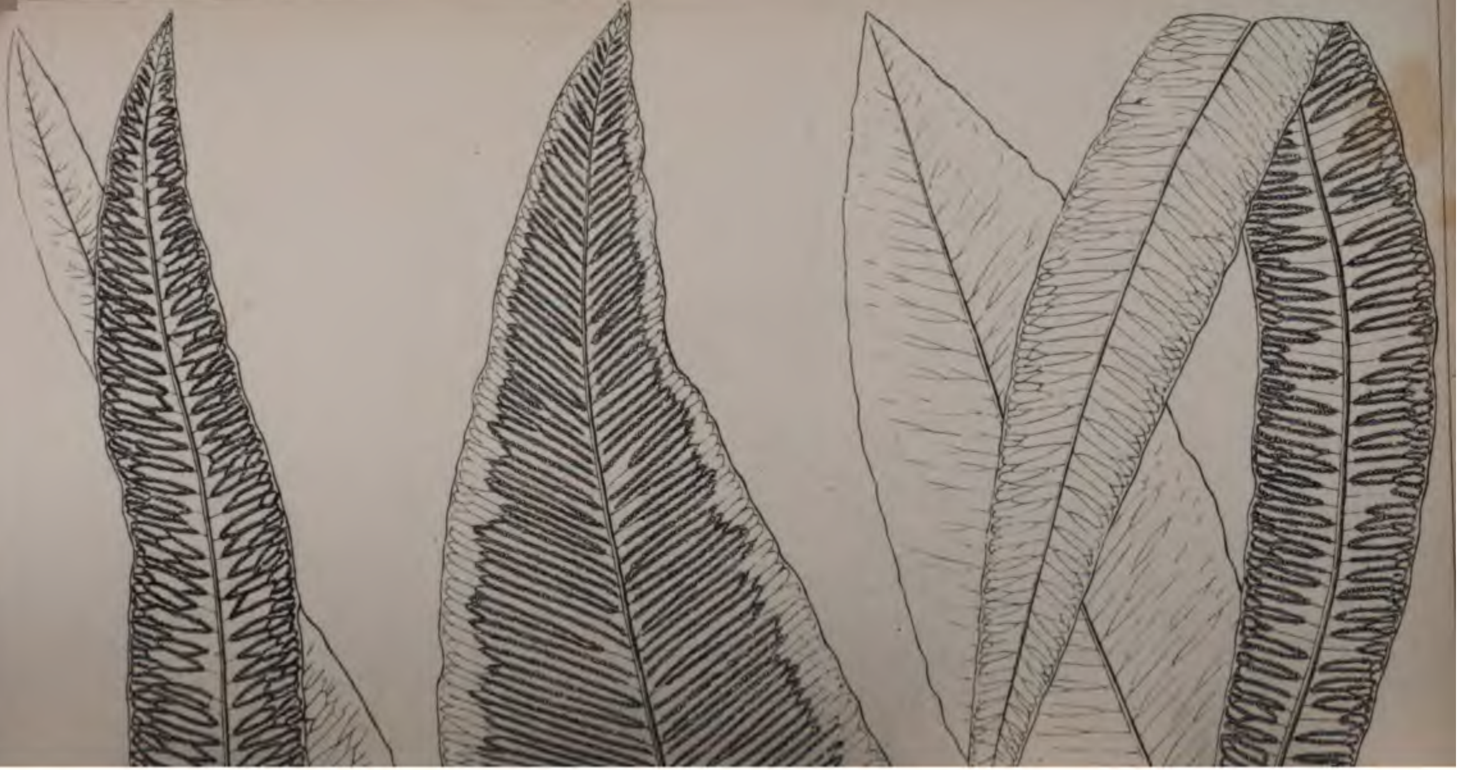
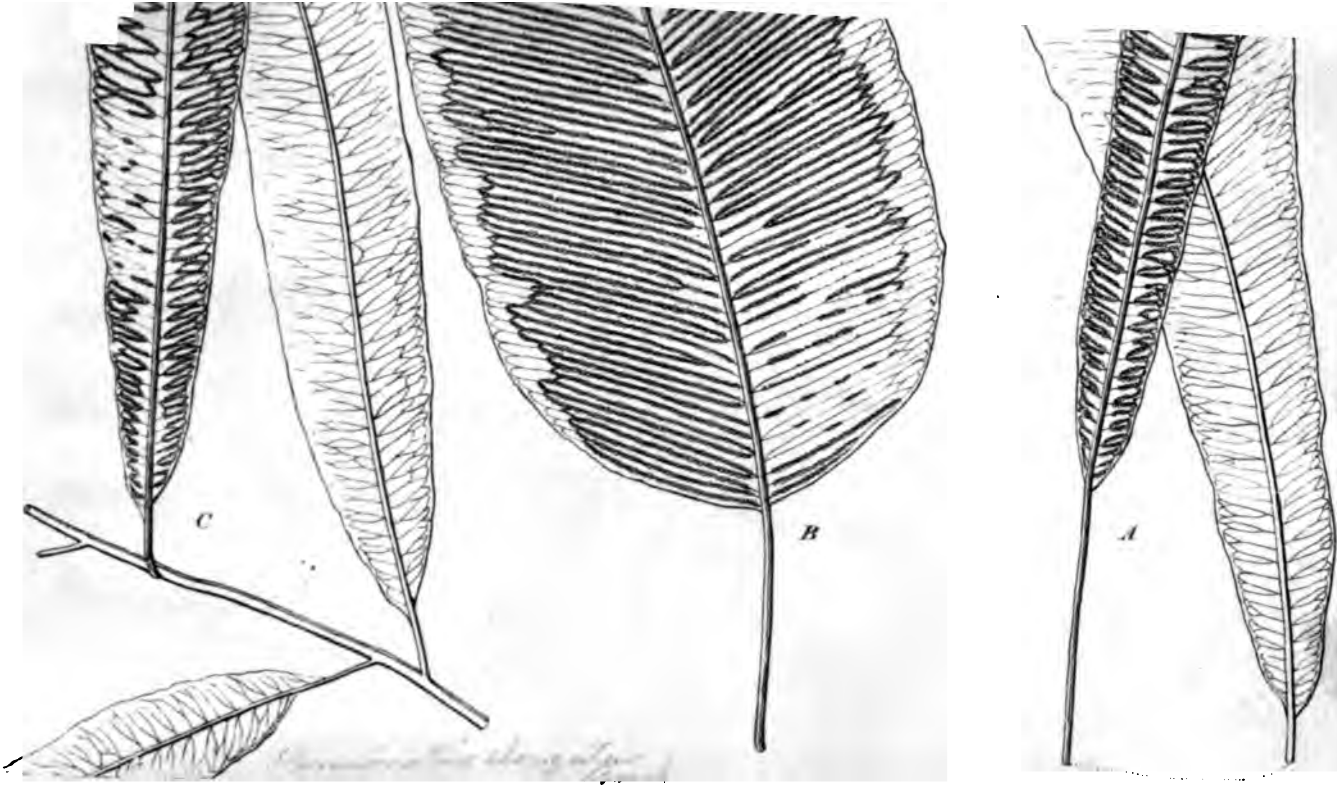


Dithyrea Californica



Dacrydium Franklinii





S. alismæfolia

S. vittæformis

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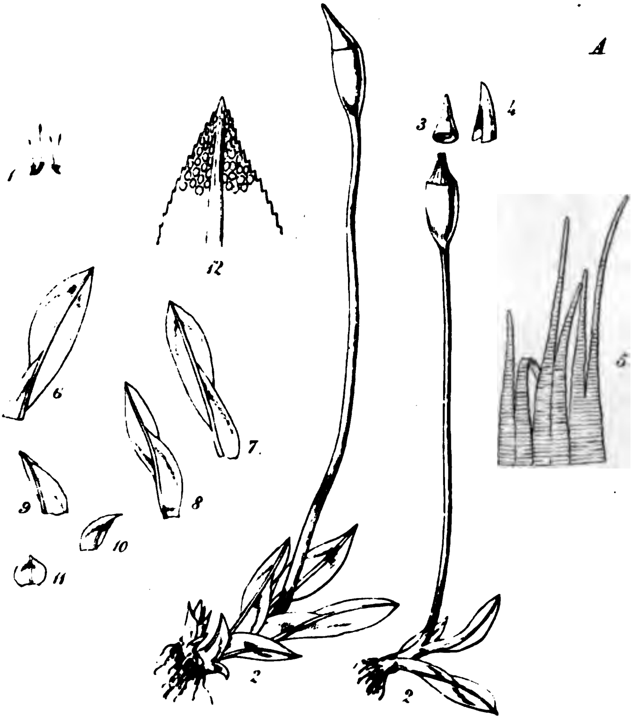
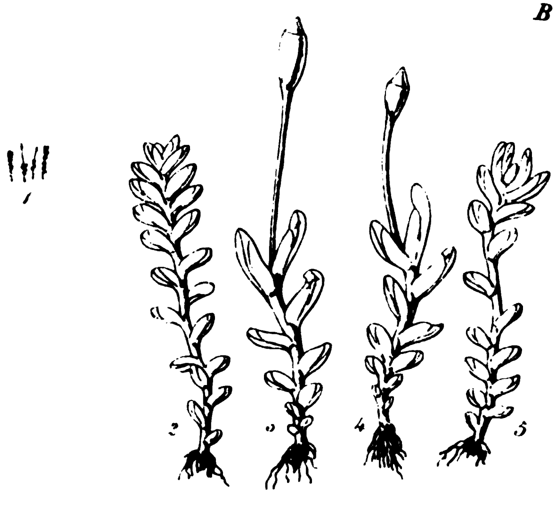


Fissidens Bloxami.



Fissidens obtusifolius

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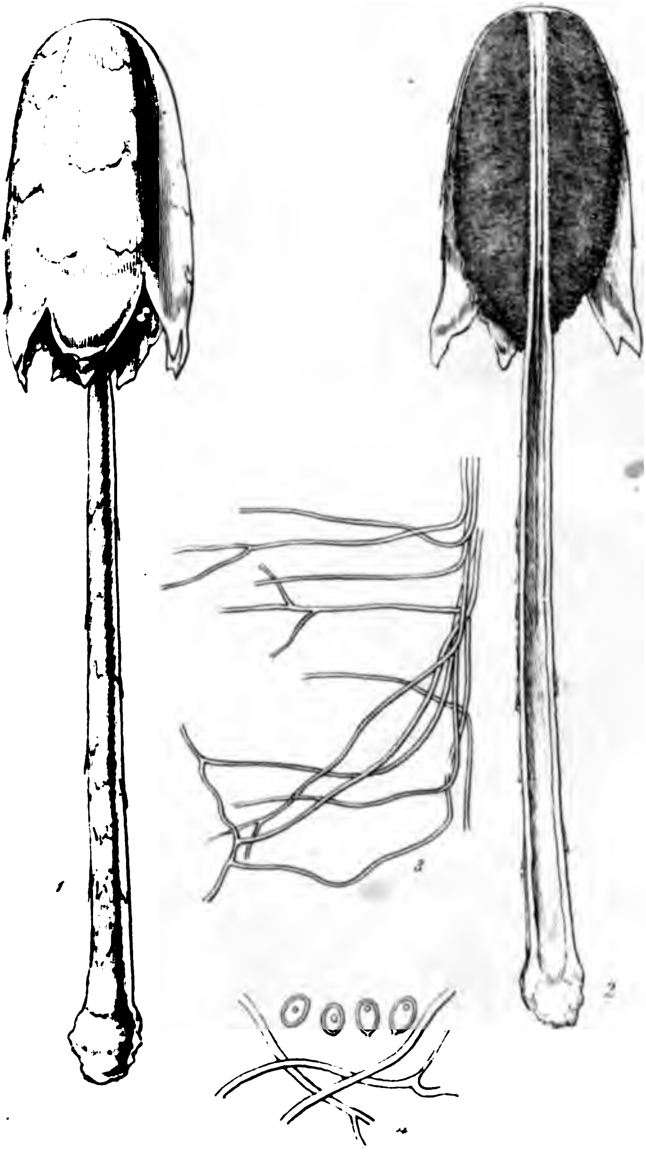

Podaxon pistillaris

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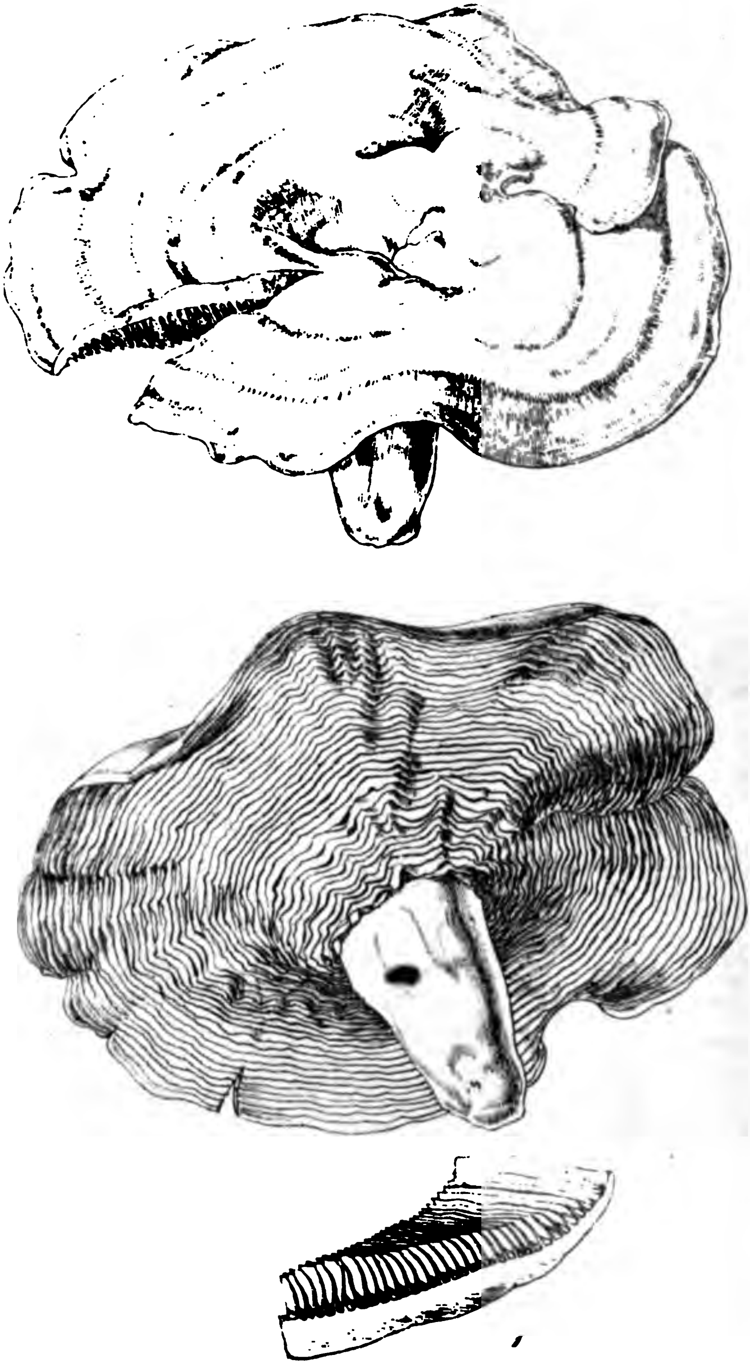

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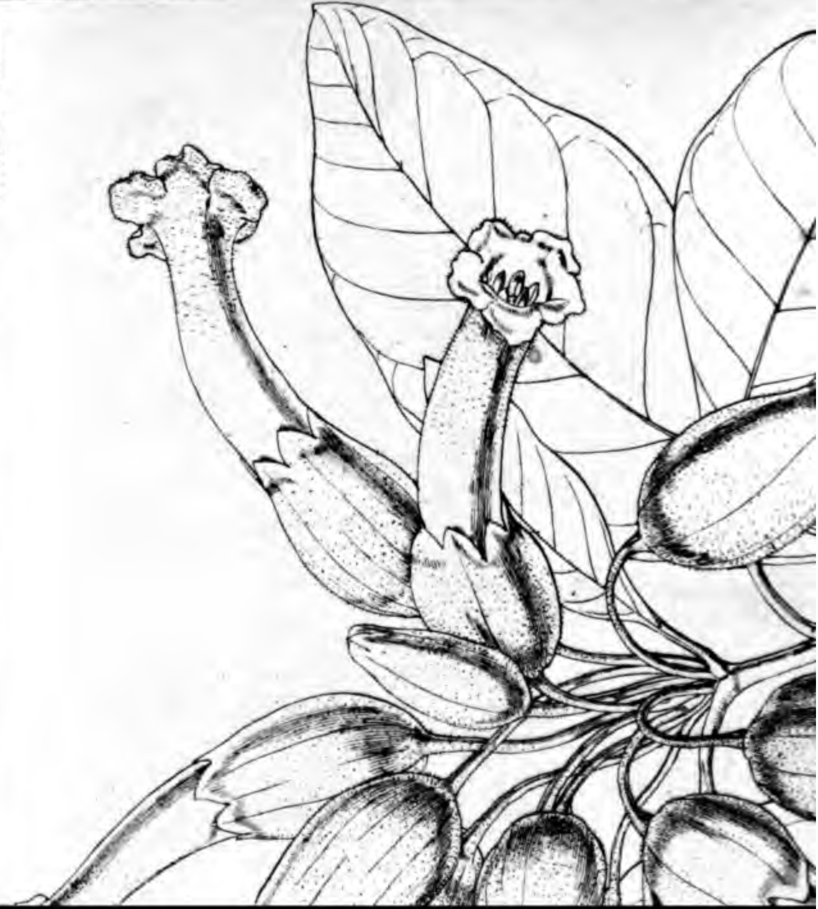
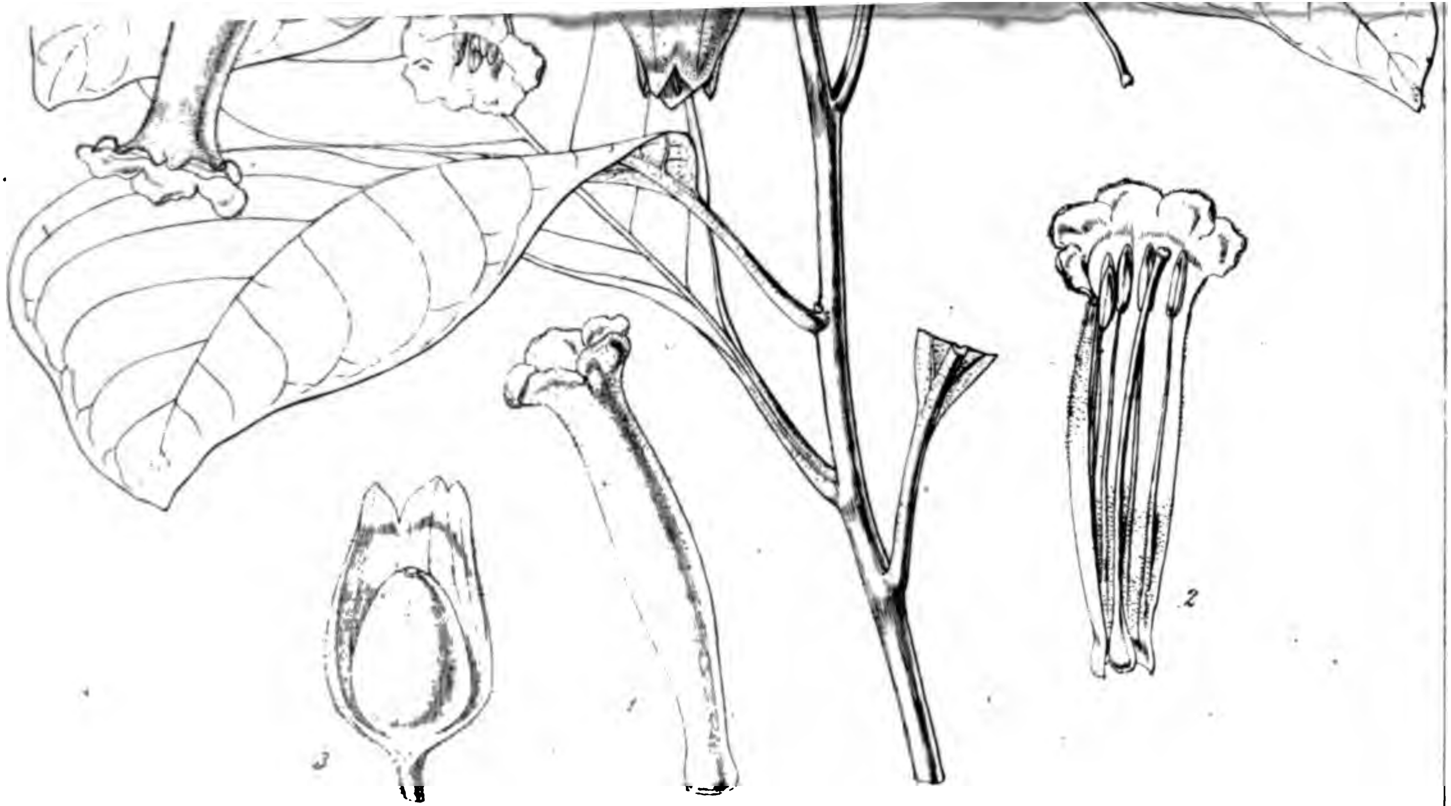
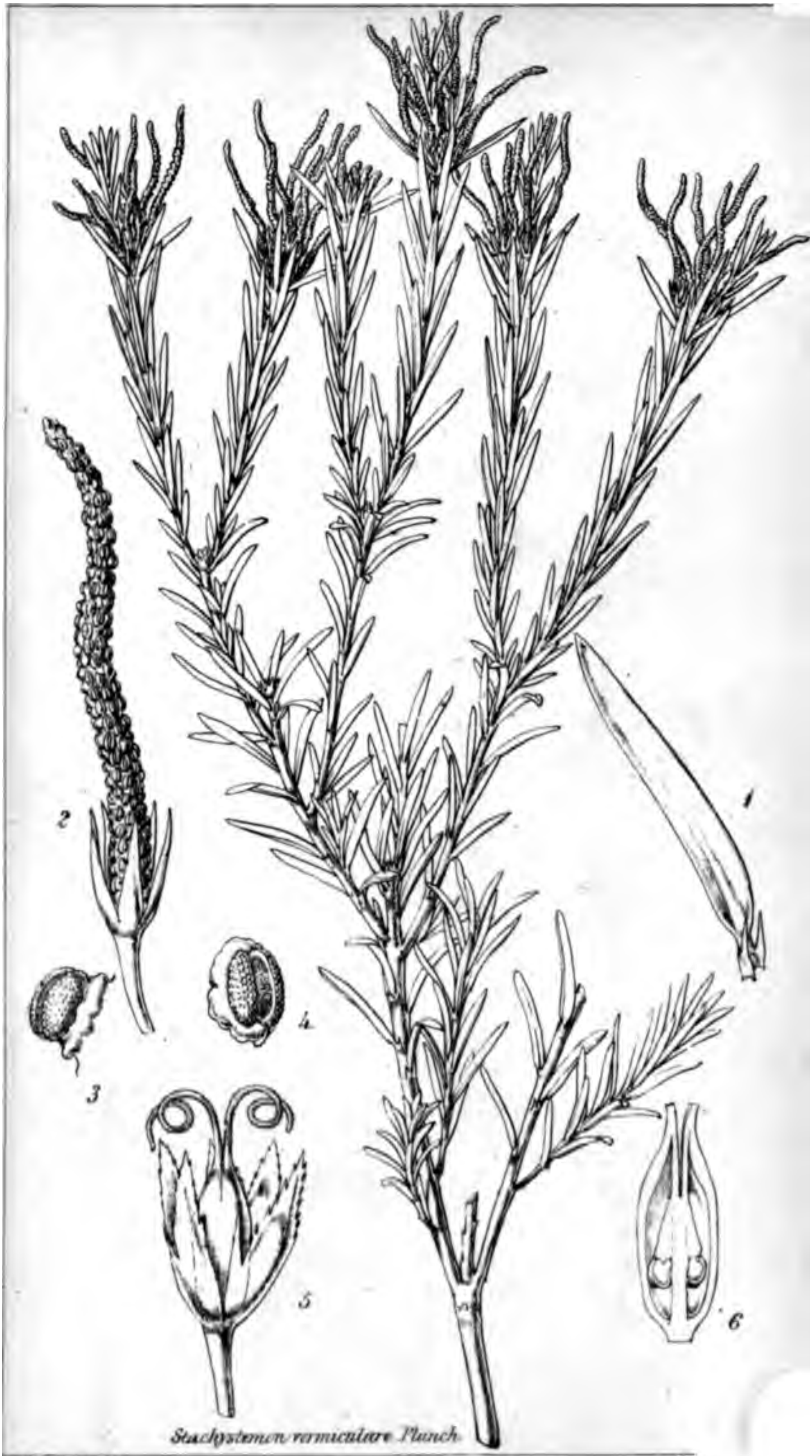




Iochroma macrocalyx.



Stachystemon vermiculare Planch.

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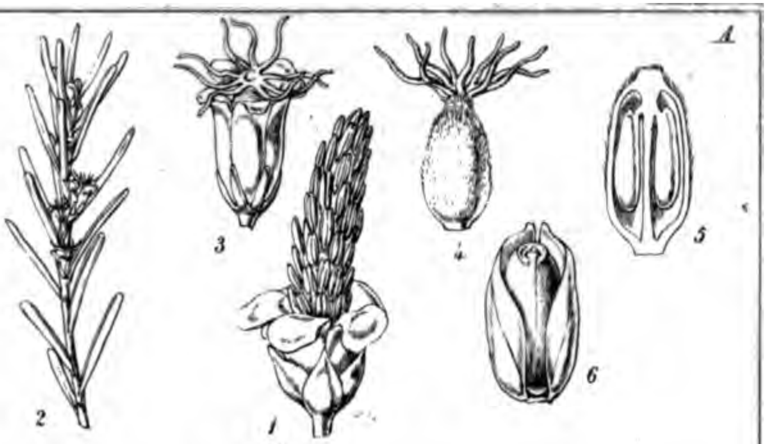
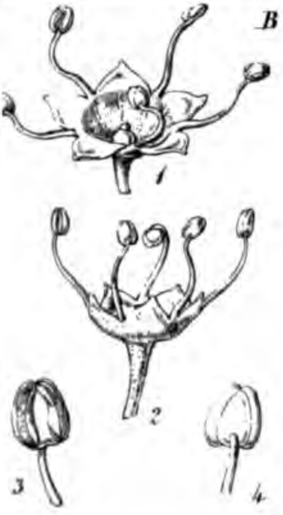
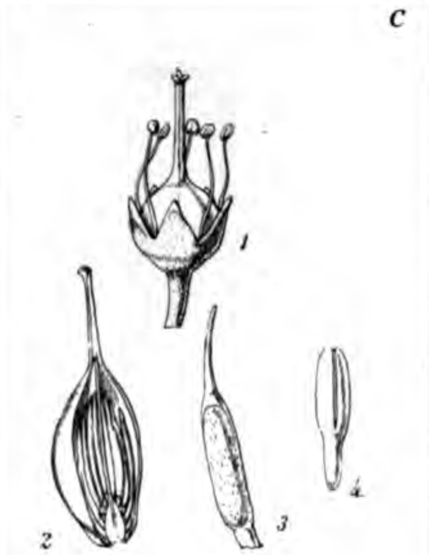


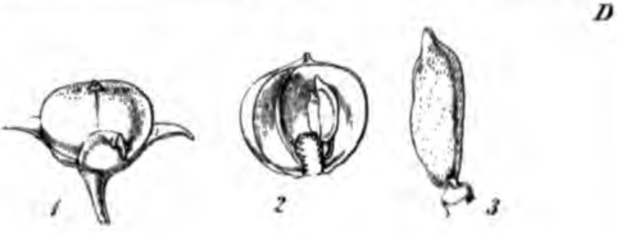
Bertya species



Henslowia pubescens Wall.



Henslowia Cumingii Planch.



Abatia parviflora. Ruiz et Pav.

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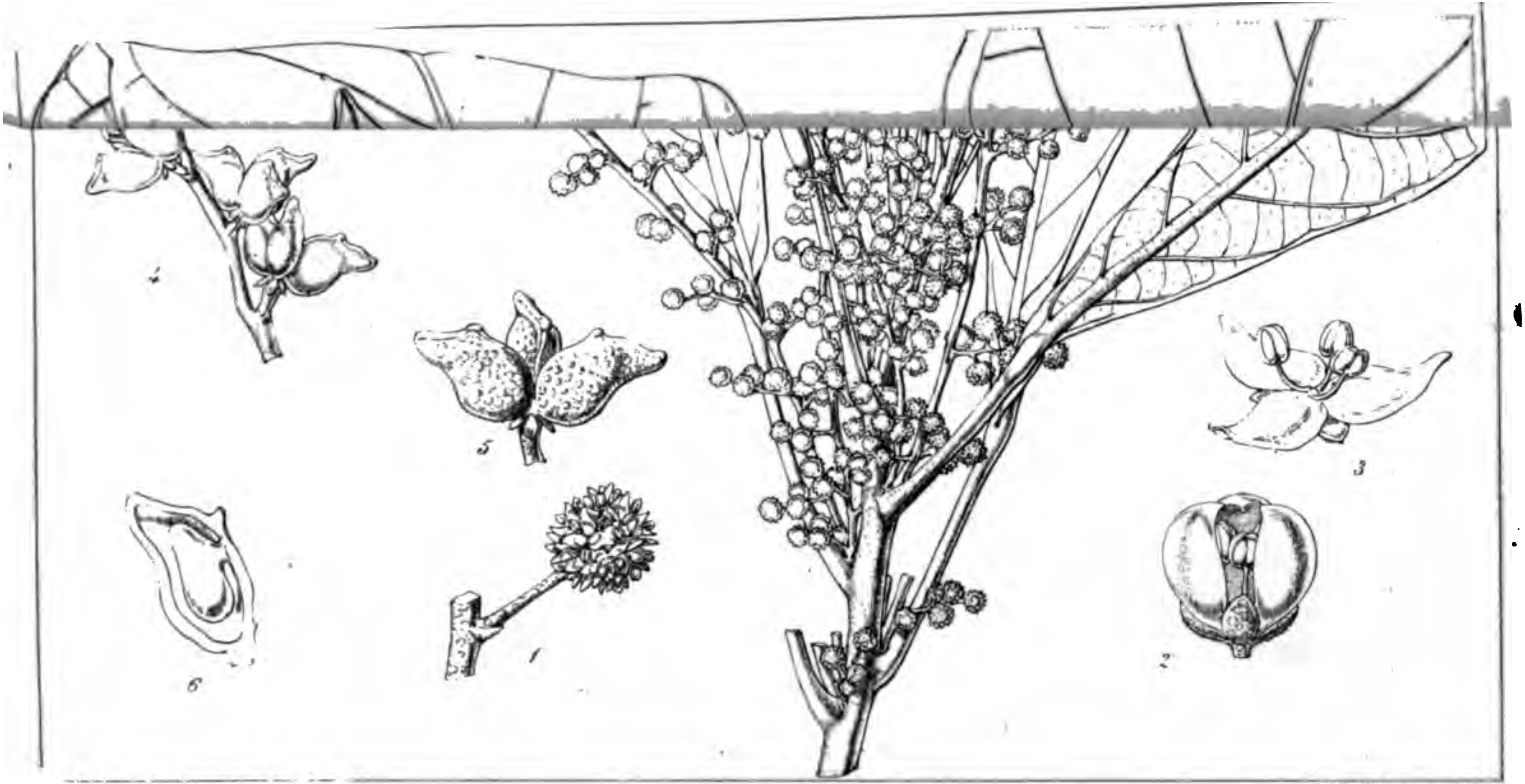
London. H. Baillière, Regent St.



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Rabelaisia Philippinensis Planch.
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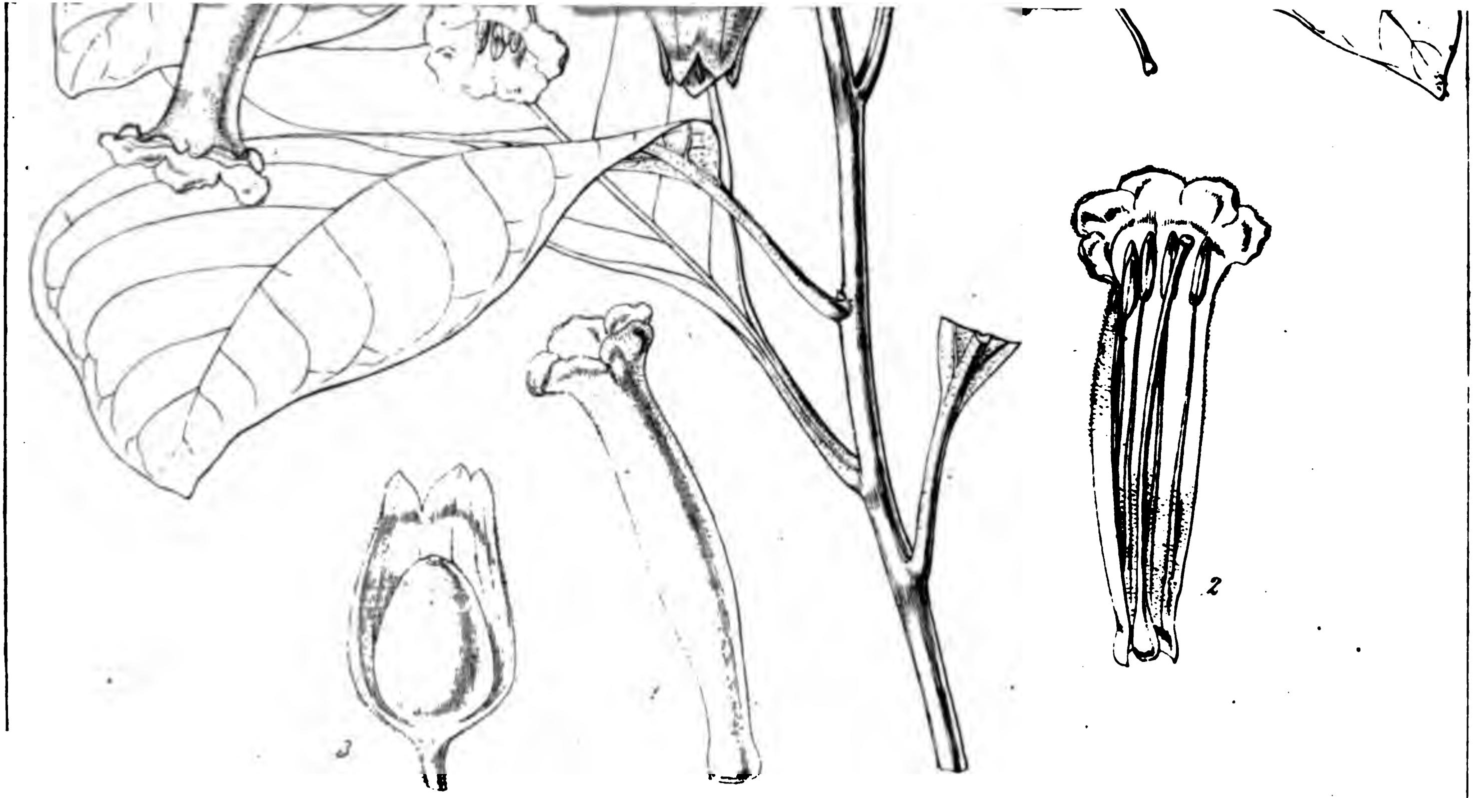

Iochroma macrocalyx.

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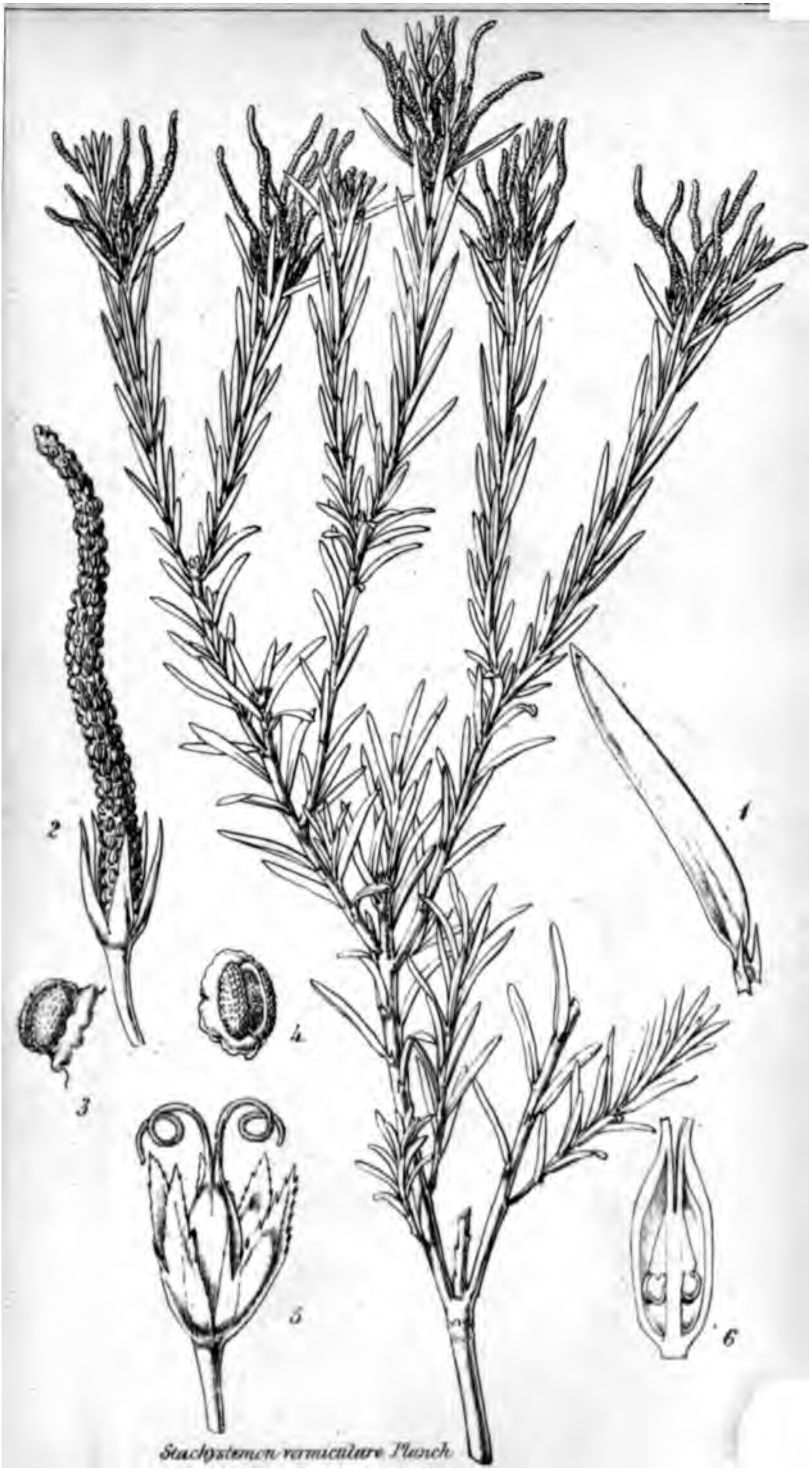

Stachystemon vermiculare Planch

F. J. & M. Planchon del.

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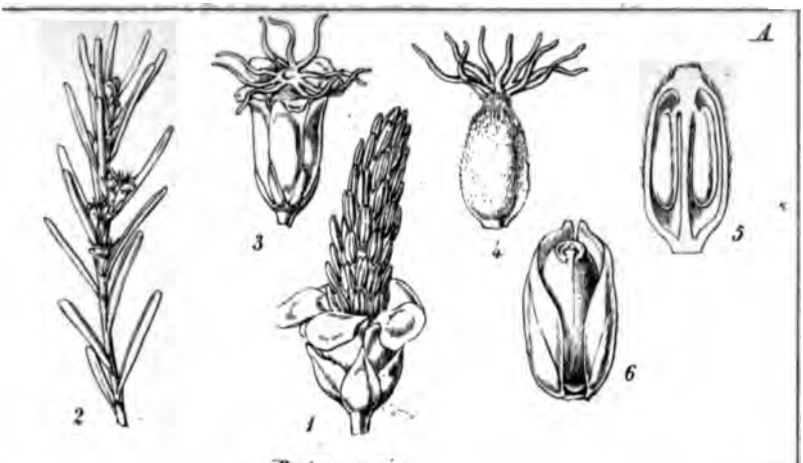
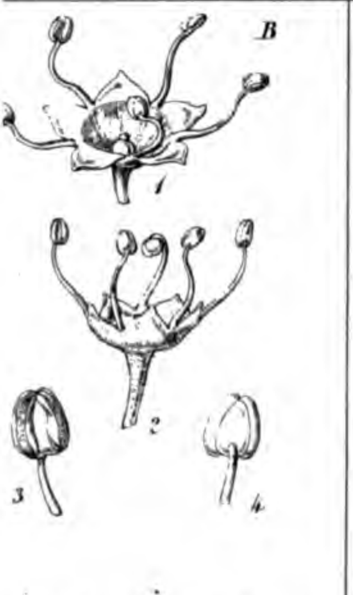
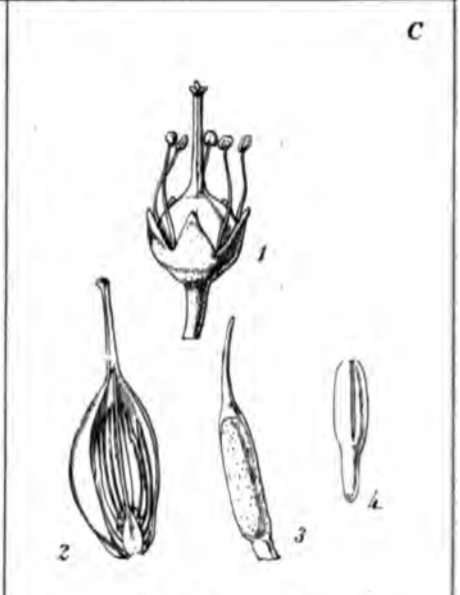


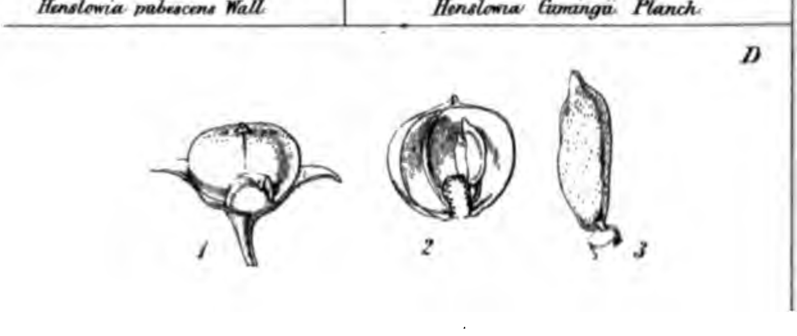
Bertya species



Henslowia pubescens Wall.



Henslowia Cumingii Planch.



Abatia parviflora Ruiz et Pav.

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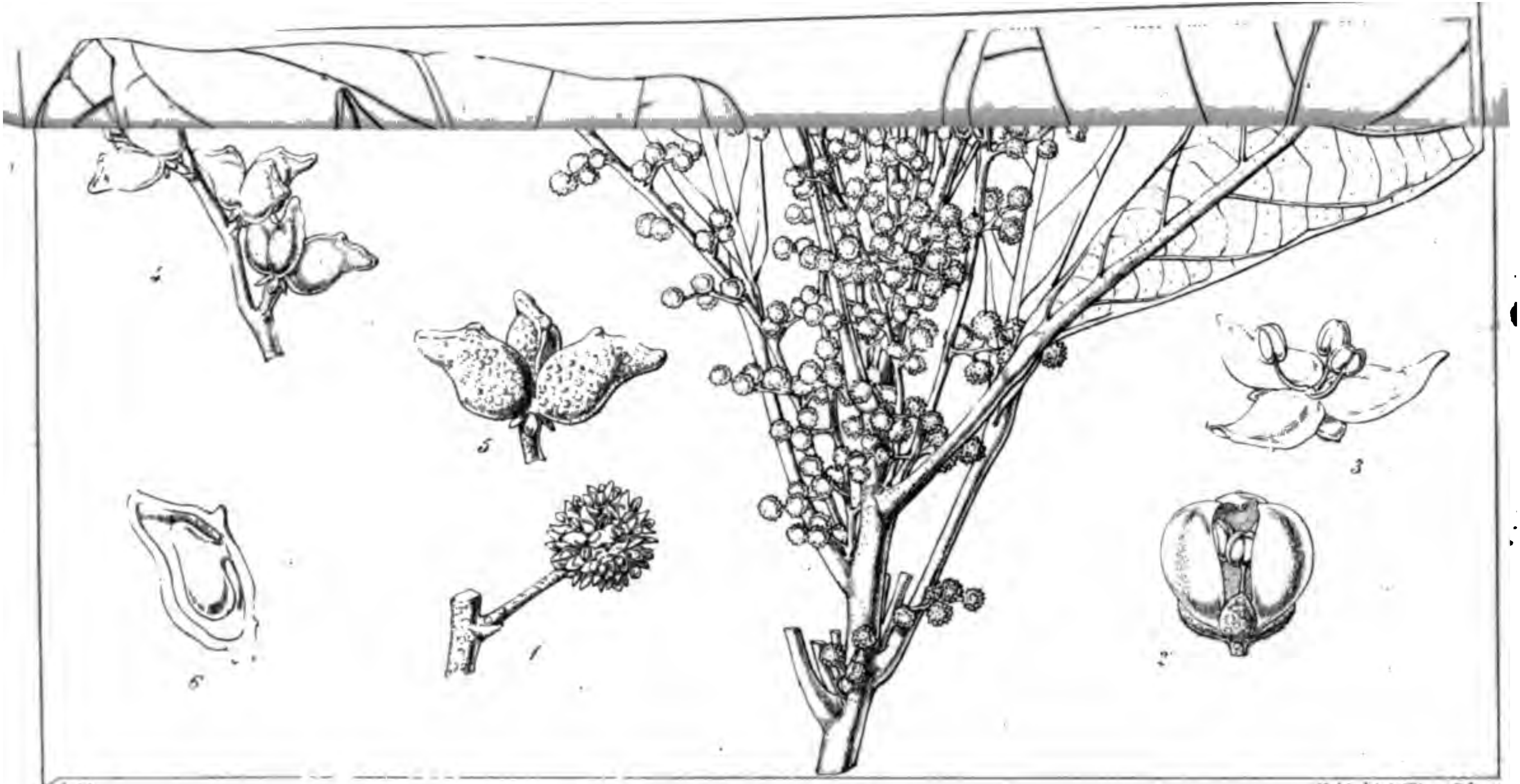

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Rabelaisia Philippinensis Planch.

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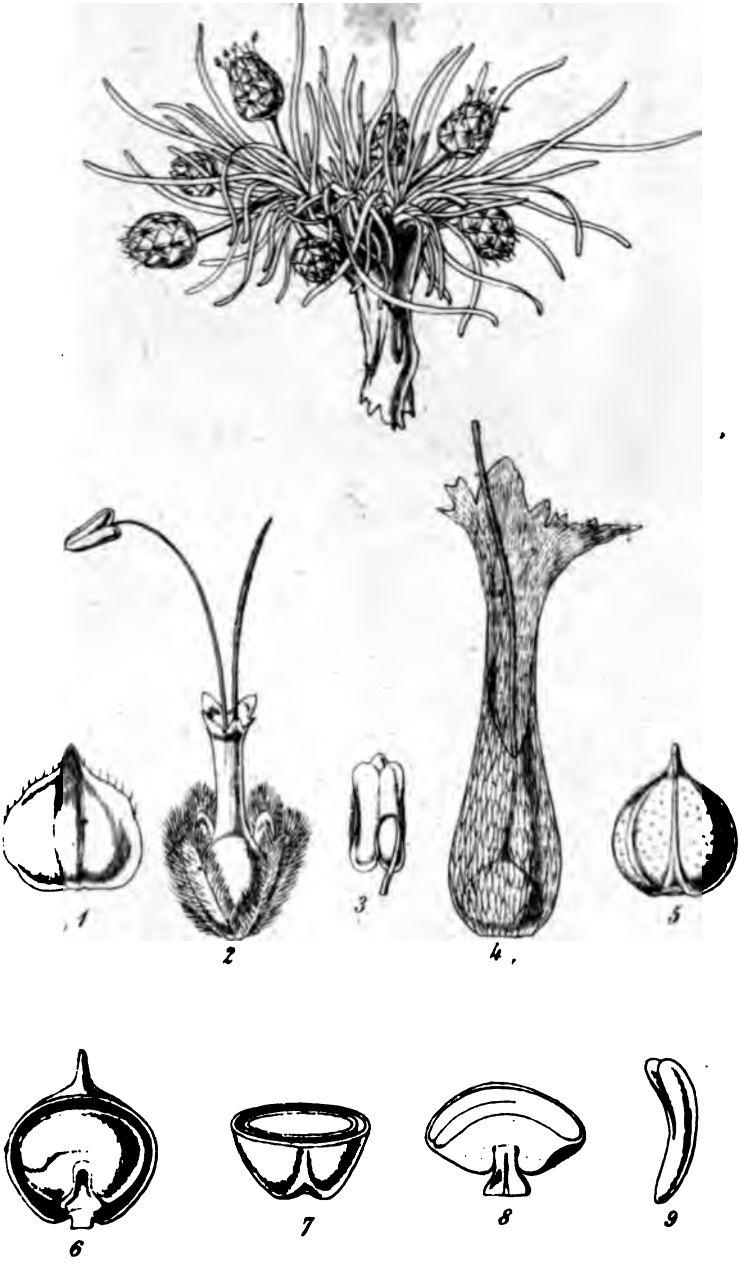

Bougueria nubicola D^ne

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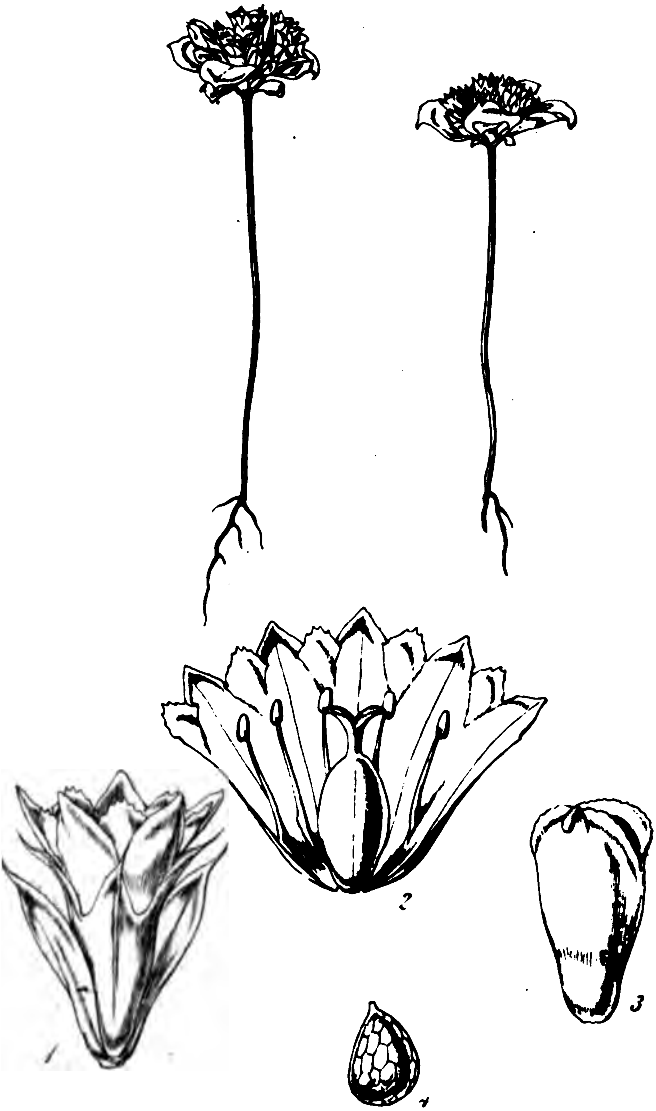
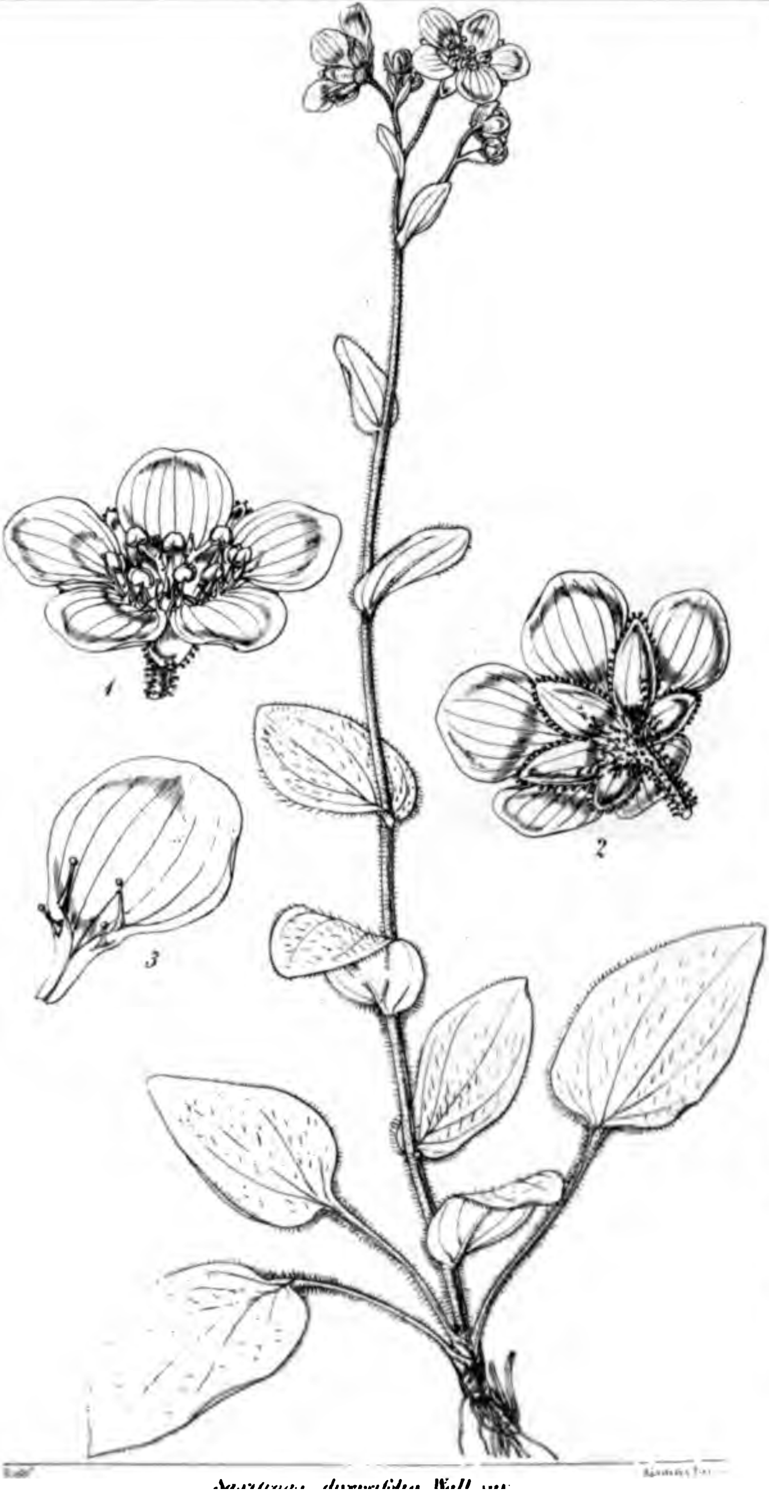
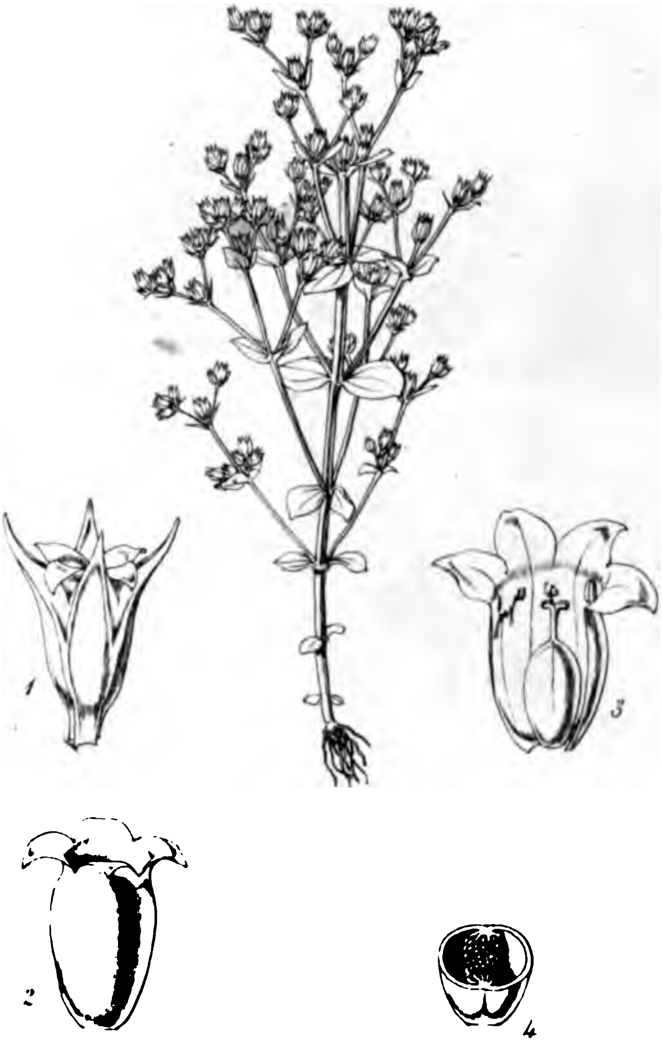


Gentiana Bavara



Saxifraga diversifolia Wall. var.



Cicendia Roxburghii Griseb

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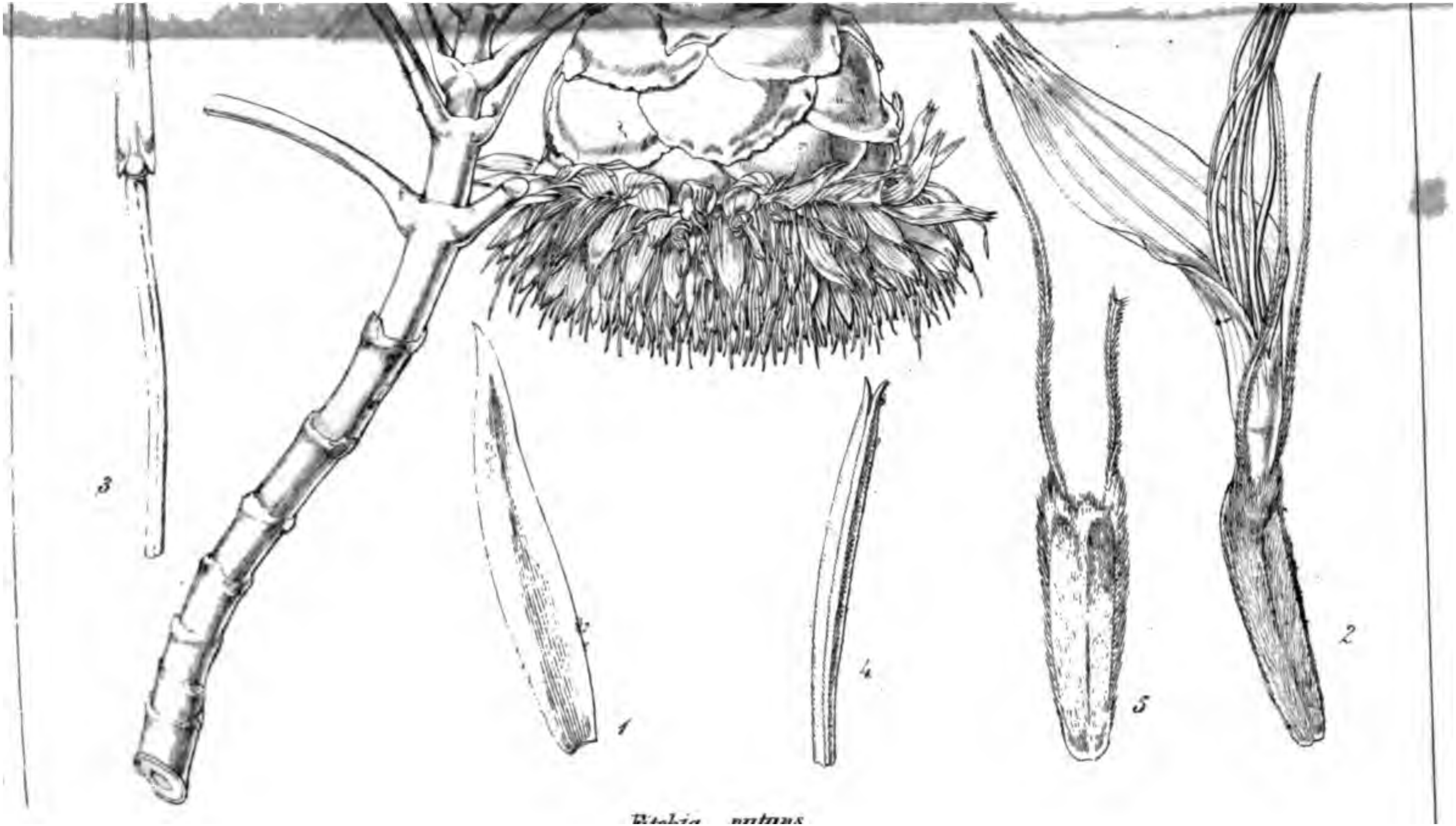
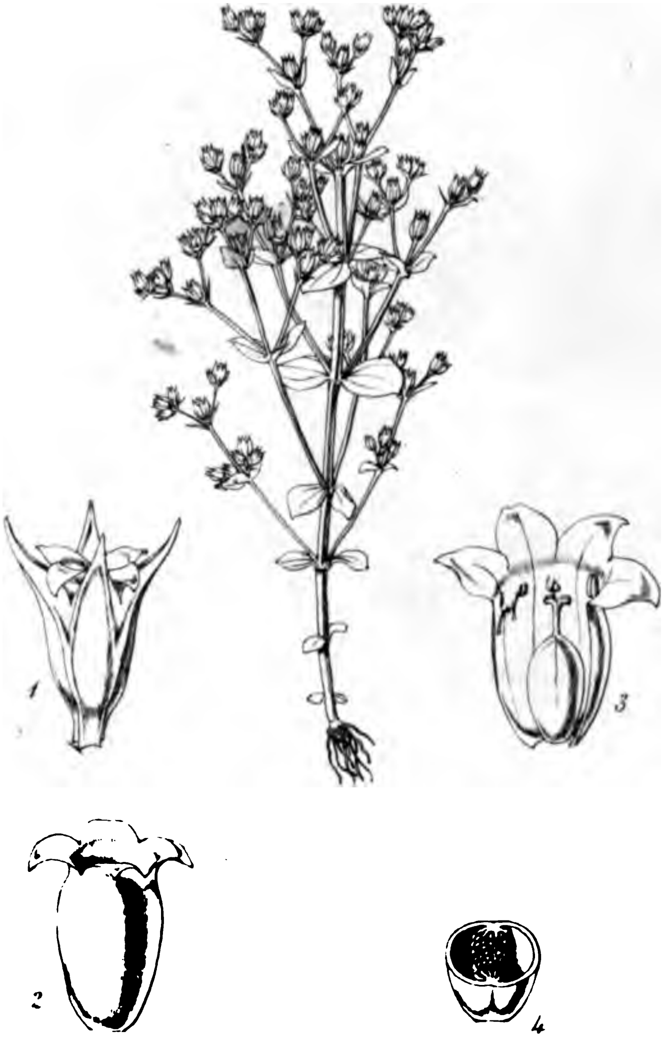


Fitchia nutans



Cicendia Keerlangia Griseb.

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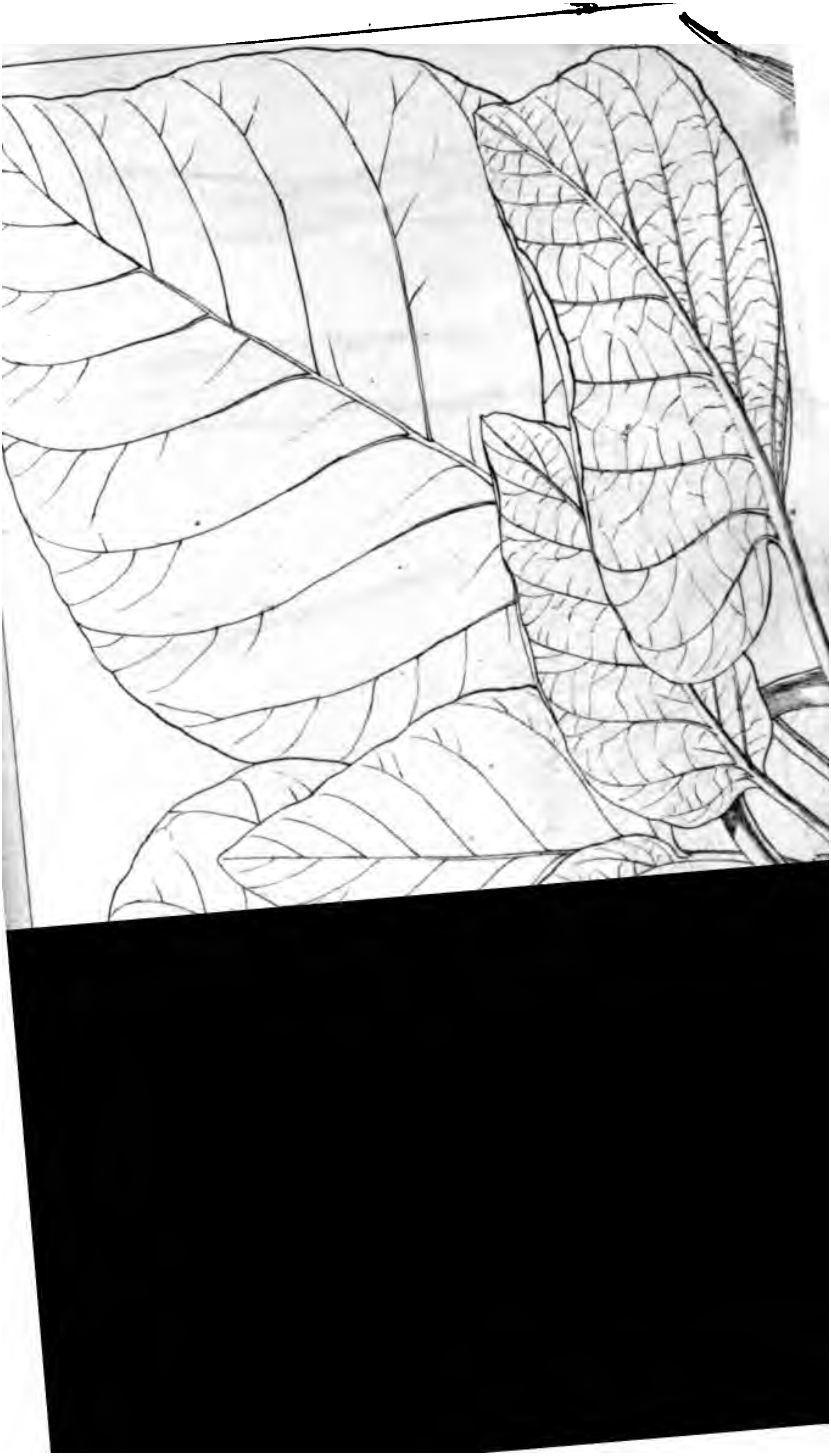

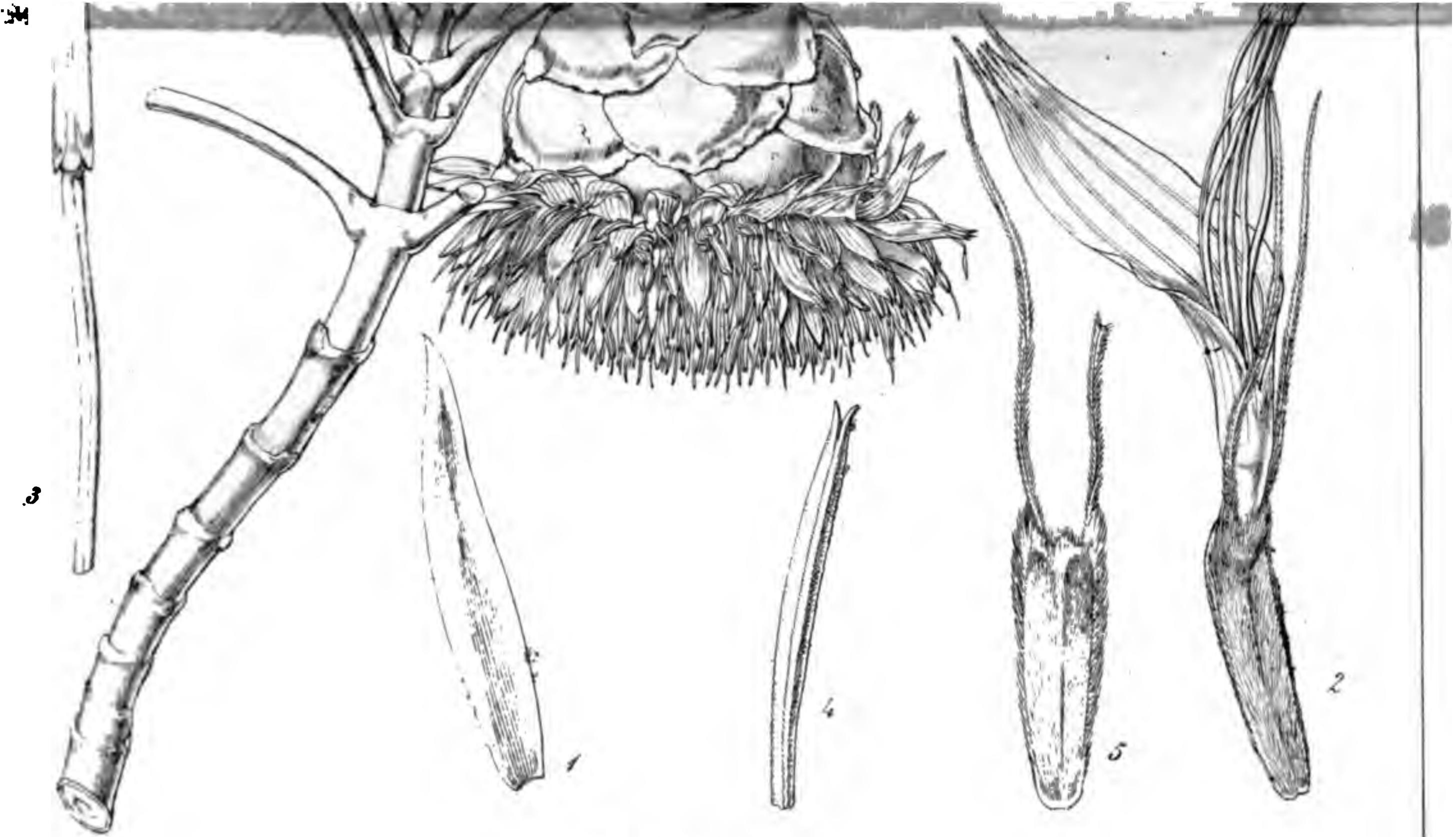

Fitchia nutans

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